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ORIGINAL ARTICLES

THE TRAGEDIES OF TOOTH EXTRACTION. GENERAL SEPSIS AND INFECTIOUS DEGENERATIVE PROCESSES FOLLOWING THE TREATMENT OF ROOT ABSCESSES

BY GEORGE BLUMER, M.D.

IT has, of course, been known for many years that infected teeth could be the source of serious, even fatal, septic complications. Such complications may result when no attempt has been made to extract or treat the infected teeth but are perhaps more apt to occur after operative interference. It is not claimed that serious complications *commonly* follow the extraction of infected teeth—indeed some observers, Falta and Depisch, for example, state that they are *exceedingly rare*. Nevertheless when we consider the enormous number of teeth which are extracted yearly in the United States, for it is only in the United States that the doctrine of focal infection is widely accepted, it behooves us to be alert as to the possibilities.

The following cases are examples of some of the types of infection which may follow the extraction or treatment of infected teeth:

GENERAL SEPTICEMIA FOLLOWING ROOT ABSCESS

CASE I. *Extraction of a tooth for root abscess. Two days later chill, fever, sweat and vomiting. Following this daily high fever and chills, nausea and vomiting, somnolence, at times delirium, a skin eruption, gradual wasting, death.*

B. L., a previously healthy young man of 22, was seen with Dr. D. J. McCarthy of Bridgeport, October 7, 1921.

The patient had been having his teeth treated for some time, and September 24, 1921, a molar tooth was extracted on account of toothache due to root abscess. September 26 the patient had a shaking chill, followed by fever and sweating. This was accompanied by nausea and vomiting. September 27 a second chill occurred, also with gastro-intestinal disturbance, and since then chills, accompanied by headache, nausea and vomiting, have been occurring almost every 12 hours. The temperature with the chills reaches as high as F. 106° and between chills falls to F. 99°. After a chill the patient is generally depressed and sleepy, but at times is irrational. There has been some itching of the skin and a few blebs have appeared on the skin of various parts of the body. For the past day or two the patient has had some cough with blood-streaked expectoration.

The patient gave a history of pneumonia at 4 and erysipelas of the face at 7. He had measles, whooping cough and chickenpox as a small child. He had none of the severe infections, did not use alcohol and was a moderate smoker. He was usually strong and well and active in athletics.

The family history was entirely negative.

Examination October 26, 1921, showed that a lower bicuspid tooth on the left side had been removed and that the cavity was red and inflamed. There was only slight enlargement of the cervical lymph nodes. There were diffuse sibilant rales scattered over both sides of the chest but no evidences of pulmonary consolidation. The heart was overacting, not enlarged; there was a soft systolic murmur at the base; the second pulmonic sound was not accentuated. The pulse was 130, dicrotic and compressible. The liver and spleen were not enlarged. The genitalia were normal. There was no edema of the shins. Neurological examination was negative. Over the buttocks there was a fading urticarial eruption, and on the ankle there was a small, dried vesicle surrounded by a narrow red areola.

The urine was transparent, free from albumin and sugar, and showed no sediment.

A blood smear showed an apparent increase in leukocytes. The differential count was polymorphonuclears 79%, lymphocytes 20%, transitionals 1%.

A blood culture was negative.

The sputum was negative for tubercle bacilli. Cultures from the sputum showed the staphylococcus aureus and an unidentified Gram negative bacillus.

The patient continued to run high fever with chills, became gradually more septic and died November 4, 1921. An autopsy was not obtained.

CASE II. *Drainage of a root abscess. A few days later slight indisposition soon followed by a marked chill and sweat. Recurrence of occasional chills and sweats. Septic type of fever. Gradual loss of weight and strength. Gradually developing heart murmur with petechiae. Streptococcus hemolyticus isolated from the blood. Increasing stupor followed by coma and death.*

J. H. W., a lawyer, aged 69, seen with Dr. George H. Joslin of Hamden, March 18, 1924.

Early in March, 1924, the patient had a pocket of pus drained from an infected tooth. March 6 he did not feel well and thought he had a cold, but by March 9 he felt well enough to go to church. March 10 he had a severe chill at 10 A. M. At 11 A. M. the temperature was F. 101°. In the afternoon he sweated and the temperature fell to normal. The following day there was no fever, but March 12 a second slight chill occurred, followed by fever and sweating. He felt fairly well till March 17, when the temperature went up to F. 100° in the afternoon without chill. March 18 he had a chill in the morning, was nauseated and vomited.

His past history was almost negative. He had a Whitehead operation in 1923 without complications. A month before the present illness he had an attack of lumbago. He had formerly taken a considerable

amount of alcohol and had always been a liberal eater of rich food.

His family history was negative.

Examination March 18 showed a well nourished man, slightly flushed. The tongue was moist and coated. The teeth appeared in good condition. The tonsils were not enlarged. The pulse was 80, regular, of medium volume, not compressible. There was no general glandular enlargement. The lungs were clear back and front. The chest was deep and the heart sounds were distant, feeble and apparently clear. The abdominal wall was thick. The liver dulness reached to the costal margin and the edge could not be felt. There was tenderness in the gall bladder region which disappeared with the gurgling of some gas from the hepatic flexure. The spleen and kidneys were not palpable. There was no tenderness over the costo-vertebral angles. The genitalia were normal. The prostate was not enlarged. There was no edema of the shins. Neurological examination was negative.

A 24-hour specimen of urine showed a specific gravity of 1.016, was alkaline, clear, and showed no albumin and the slightest possible trace of sugar. Microscopically there were occasional leukocytes, not clumped, and rare red blood cells.

A blood smear showed a definite increase in the leukocytes and a differential count of polynuclears 93%, mononuclears 7%. There was slight polychromasia, but the red cells were otherwise normal.

A blood culture taken March 18 and a second one a few days later were negative, but a third one obtained April 6 showed many colonies of streptococcus hemolyticus.

The patient was seen again March 22. Between March 18 and 22 he had daily chills, and the temperature on March 20 rose to F. 104°. The chills were generally followed by fever and sweating, and with the severe chills nausea and vomiting occurred. There was no headache. Marked anorexia was present. The bowels moved freely with the aid of mild purgatives. The patient felt weak and was somewhat somnolent. There was no cough.

Examination March 22 showed that the pulse was still regular and not rapid. With the temperature at F. 103.8° the pulse was only 108. There were a few moist rales at the base of the right lung behind. A very soft systolic murmur could be heard at the apex of the heart; it was sharply localized. The spleen was not palpable.

April 6 the fever was continuing and the patient felt weaker. He showed signs of loss of weight and was more sallow. The tongue was coated and dry. There were several petechiae on the palpebral conjunctivae of both lids and a few on the back and about the neck. There were no retinal hemorrhages. The systolic murmur was more prolonged.

April 13 the patient was reported to be breathing badly. Examination showed Cheyne-Stokes respiration. The patient was shivering and had a temperature of F. 105.2°. He was stuporous and did not answer questions. The pulse was much more compressible and the heart sounds were feeble. There were fresh petechiae on the conjunctiva of the left lower lid.

April 14 the patient felt better. There were a few fresh petechiae on the chest. The heart murmur was unchanged. The spleen could just be felt under the costal margin.

April 18 the patient was obviously failing. He was stuporous and could not be aroused. There were no paralyses. The pulse was regular but rapid and very compressible. The face was yellow and pinched. There were a good many new petechiae about the neck and on the abdomen.

April 19 the patient gradually became more comatose and died at 10:30 P. M. An autopsy was not obtained.

These cases are examples of general sepsis following in the one case the extraction of an infected tooth and in the other the drainage of a root abscess. In both instances the patients were apparently healthy up to the time the teeth were treated. In both instances the process ran rather an acute course, the patients dying about six weeks after the onset of definite symptoms. The infecting organism was not isolated in case one, though the presence of the staphylococcus aureus as the predominating organism in the sputum culture suggested that the sepsis may have been due to that organism. There was no definite evidence of endocarditis in the first patient, but in the second the development of a cardiac murmur which altered in character under observation, the presence of showers of petechiae and the occurrence of streptococcus hemolyticus in the circulating blood leaves little room for doubt that a heart valve, presumably the mitral, was infected.

DEGENERATIVE PROCESSES OF INFECTIOUS ORIGIN FOLLOWING TOOTH EXTRACTION

CASE III. *Onset with visual disturbances due to old and fresh retinal hemorrhages. Thickened peripheral vessels with hypertension, slight heart hypertrophy and albuminuria. Extraction of several abscessed teeth with infection of the clot. Vomiting and weakness immediately following this with itching of the skin, jaundice, increasing diminution of the liver dulness, restlessness, muscular twitching, stupor and death in a convulsion.*

J. R. P., aged 54, a teacher, seen for Dr. D. C. Brown of Danbury, January 18, 1923.

December 16, 1922, the patient had an infected wisdom tooth removed, and January 2, 1923, he noticed that his vision was impaired, though there had been some improvement since that time. He had not been feeling perfectly well since an attack of influenza in March, 1922. His chief symptoms were throbbing of the neck vessels (which, however, he had noticed for years), sluggish bowels, nocturia with nocturnal polyuria, and loss of weight. He had no headache, no dyspnoea and no edema. He slept well.

The patient had severe scarlet fever as a child. He had frequently had sore throats and caught cold easily. Ten years previously he had an ulcerated tooth, sciatica, and an ulcer of the bladder. His habits were excellent.

His family history was without bearing on his present illness.

Examination January 18, 1923, showed over-tortuous and thickened temporal arteries. The teeth appeared normal but some showed evidences of infection on X-ray examination. The throat was congested. The pulse was 108, regular, of medium volume and incompressible. The blood pressure was 240/145. The lungs were clear back and front. The cardiac impulse was in the fifth space 10 centimeters to the left of the median line. There was a short systolic murmur at the apex. The sounds at the base were clear and there was no accentuation of the second aortic sound. The liver and spleen were not enlarged. The kidneys could not be palpated. The genitalia were normal. There was no edema of the shins. The eye grounds showed white patches, exudate and small hemorrhages; the arteries showed evidence of sclerosis (Dr. A. N. Alling).

The urine was of low specific gravity and showed a trace of albumin and a few hyaline casts.

The Wassermann reaction was negative with both alcoholic and cholesterinized antigens.

The blood sugar was 189 milligrams per cent. and the non-protein nitrogen 52 milligrams per cent.

The patient did fairly well until early in May, 1923, when he had several infected teeth removed. The removal was followed by a good deal of bleeding and infection of the clot. The patient immediately began to complain of weakness and headache, which was accompanied by persistent vomiting. The vomitus at first was bile-stained mucus and later coffee ground material, probably from swallowed blood. The patient was restless at first, but soon became drowsy. There was itching of the skin, perhaps partly due to morphia, and great mental depression.

Seen again with Dr. Brown on May 3, 1923, the sockets of the removed teeth still showed signs of infection. The patient was distinctly sallow, yellowish, but not distinctly jaundiced. There was twitching of the muscles of the hands and forearms. The skin showed numerous scratch marks. The blood pressure was 267/140. The lungs were clear. The heart showed no change except enfeeblement of the sounds. The liver dulness was slightly diminished. The spleen was not enlarged. The tendon reflexes were exaggerated and there was bilateral ankle clonus.

The urine, 24 ounces in 24 hours, showed 4% albumin by volume after centrifugalization. There was no sugar or acetone. Microscopically there were a few hyaline casts and a few pus cells.

The patient was seen again May 10, 1923. He stated that "he felt like the devil." He was still vomiting and was sleeping fairly well with the aid of chloral.

Examination showed a moist but heavily coated tongue. The tooth sockets were healing. There was distinct jaundice of the conjunctivae. The lungs were clear. The quality of the heart sounds was fairly good. The abdomen was somewhat tense. The liver dulness had markedly diminished since the previous visit and the edge could not be felt. The spleen could not be felt.

The urine contained bile and a trace of albumin with a few hyaline casts.

A blood examination showed: Red blood corpuscles, 3,000,000; leukocytes, 8,400. A differential count showed 89% polynuclears and 11% mononuclears. The red cells appeared normal. There was no diminution of platelets.

The blood sugar was 102 milligrams per cent. and the non-protein nitrogen 175 milligrams per cent.

The patient continued to vomit and discharged large quantities of bile-stained material from the bowels. He became very restless and developed visual and perhaps auditory hallucinations; there was marked twitching of the muscles and he finally died in a convulsion May 15, 1923. Before death the liver dulness could no longer be percussed. An autopsy was not obtained.

This case illustrates the dangers of tooth extraction in a patient already suffering from a chronic disease. The patient was in an advanced stage of hypertensive cardio-renal-vascular disease as the eye lesions and the blood chemistry indicated. The final illness had all the ear marks of a hepatic toxemia of the acute yellow atrophy type. The severe gastro-intestinal symptoms, the increasing jaundice, the steady diminution of the liver dulness, the high non-protein nitrogen and the death in convulsions all favored this diagnosis. The case is of especial interest in view of the pathological findings in the following case:

CASE IV. *Removal of upper set of teeth for pyorrhoea. A few days later pain in the left side, followed by pain in the hip joints, anorexia, nausea and vomiting, some dizziness. Slight dyspnoea and palpitation on exertion. No urinary symptoms. Slight elevation of blood pressure. Persistence of gastro-intestinal symptoms with high non-protein nitrogen and very low phthalein excretion. Diminution of urinary excretion with increasing lethargy and death. At autopsy chronic infectious nephritis, extensive degenerative lesions in the liver and heart muscle, and latent carcinoma of the prostate.*

A. J. S., an American executive, aged 56, seen for Dr. E. L. Stone, July 8, 1925.

Complaint, pain and stiffness in the hip joints.

About June 3, 1925, the patient had his upper set of teeth removed for pyorrhoea. Within a week he noticed pain on the left side from the chest to the hip, and he still complains of sensitiveness about the left breast. About July 1, during a game of golf, he had a cramp in the middle of his back. Since then the hip joints have been painful and stiff, so that it has been hard for him to get out of bed in the morning. He has anorexia, constant nausea, and varying degrees of dizziness. The bowels are somewhat constipated. There is slight dyspnoea and palpitation on exertion. There is no nocturia or dysuria. The urinary stream is strong and full. He sleeps well. There has been no loss of weight.

The past history is uneventful. He had the milder children's diseases and no other sickness except a fever 30 years ago, the nature of which he does not know. He has never used alcohol but is a continuous pipe smoker. He has been a hearty eater of plain food.

His family history is negative except that one sister died of Bright's disease and one of cancer of the breast.

Examination showed a muscular man 45 pounds over the standard weight for his height and age. The upper teeth were gone, the lower teeth showed pyorrhoea. The tonsils were not enlarged. The tongue was moist and coated posteriorly. The thyroid gland was not enlarged. The pulse was 96, regular and rather bounding. The blood pressure was 158 systolic, 82 diastolic (normal 139/90 according to Symonds' table). The lungs were clear back and front. The heart was not enlarged to percussion; there was a short rough systolic murmur at the aortic cartilage; the second aortic sound was not accentuated. The abdomen was soft. The liver and spleen could not be felt. There were no palpable masses. The spine was supple. There was tenderness over the lumbar muscles.

A single specimen of urine was acid, contained 0.35% of albumin by Esbach, and no sugar. Microscopically there were numerous hyaline casts, an occasional granular cast, two epithelial casts and one fatty cast. There were a few red and white blood corpuscles. A 24-hour specimen of urine (970 cubic centimeters) was acid, with a specific gravity of 1.019, and contained a faint trace of albumin, fairly numerous hyaline casts and a few leukocytes.

The patient did not do well and August 4, 1925, entered the New Haven Hospital for further observation. His anorexia and nausea had continued and he developed vomiting, usually between 6 and 8 P. M. The vomiting bore no relation to food and was usually bitter mucus.

The physical examination was unchanged. The blood pressure had fallen to 116/90. A special urinary examination by Dr. Clyde Deming showed a prostate of normal size with a shallow median furrow and a moderately wide notch. The surface was flat, smooth, firm but elastic. Examination of the fundi by Dr. Arthur Yudkin showed considerable arteriosclerosis and moderate edema of the fundi, including both discs. A gastro-intestinal X-ray series by Dr. Clifton Scott was negative. There was no

fever, the pulse ranged between 70 and 90, and the respirations were normal.

The urine at this time was straw colored, cloudy, specific gravity 1.011, and contained a trace of albumin and a few hyaline casts.

An intramuscular phthalein test made August 6 showed an excretion of 10% of the dye in two hours. An intravenous test three days later showed 8% in two hours. On August 21 the excretion had fallen to 3.5% and on August 26 was 4.3%.

The non-protein nitrogen was 67 milligrams per cent. on August 7, 69 milligrams per cent. on August 10, and 77 milligrams per cent. on August 21.

A gastric analysis showed figures within the normal limits and the basal metabolism was minus 14%.

The patient improved temporarily on rest and a low protein diet, but the nausea and vomiting subsequently returned. He was finally discharged somewhat improved August 27, 1925, and did pretty well at home for a week after his discharge. Then anorexia, nausea and vomiting returned. September 5 the secretion of urine began to diminish, there was diarrhoea with ascites and increasing lethargy. The patient's mind wandered somewhat and he developed signs of heart block. Just before death on August 11 he became lethargic, with deep, slow, irregular breathing, a small, slow, regular pulse, a blood pressure of 142/68, ascites and sluggish reflexes.

A summary of the autopsy findings, for which I am indebted to Dr. M. C. Winternitz, follows:

*Anatomical Diagnosis.** A. *Recent operation (removal of teeth for pyorrhoea alveolaris); multiple focal necroses of myocardium; central necrosis of liver; chronic diffuse nephritis (Bright's disease); ascites; cardiac hypertrophy.*

B. *Carcinoma of the prostate with extension to bladder and seminal vesicle walls; chronic cystitis and pyelitis.*

Heart 600 grams. Coronary arteries normal. Endocardium and valves normal. Papillary muscles round and thickened. Myocardium brown-red and firm. Microscopically focal areas of necrosis scattered throughout the myocardium in which the nuclei are absent and cytoplasm very light staining. Muscle fibers show vacuolization in these areas. In certain areas increase in fibrous tissue. Uniform hypertrophy of the myocardium.

Spleen 220 grams; 12x8x4 cm. Dark purple-red and friable. Cut surface shows a soft, swollen, congested purple-red tissue in which malpighian corpuscles are not seen. Microscopically lymphatic elements normal. Hemosiderin deposits, congestion and phagocytosis.

Liver 1900 grams; 26x17x8 cm. Capsule normal. Liver tissue light brown and firm, with numerous pinhead-sized dark areas scattered throughout its entire substance. Microscopically areas of liver cell necrosis, mostly about central veins. In many areas extravasations of red blood corpuscles. In many periportal zones small collections of mononuclears and polynuclears.

Kidneys. Good deal of perinephritic fat. Large, weigh 200 grams approximately. Capsules strip readily, leaving a smooth, pale surface with occasional fine hemorrhages. Cut section shows firm, homogeneous, extremely pale cortex. Glomeruli and striations not visible. Medullary portion swollen. Mucosa of pelvis reddened. Microscopically many tubules dilated and filled with casts. Some tubules contain polynuclears, mononuclears and red blood corpuscles. In many places the epithelium lining the tubules is atrophied. Glomeruli mostly enlarged, almost fill capsular spaces. No exudate into spaces except finely granular pink staining material. Interstitial tissue increased in amount in many places; edematous, congested, diffused and focally infiltrated with mononuclears and some polynuclears. Mucosa of pelvis thickened and edematous. Extensive extravasation of red blood corpuscles beneath epithelial layer.

Prostate and bladder. Trigonal area occupied by a firm nodular mass 2 cm. in greatest diameter, just above and attached to middle lobe of prostate. Portion of mass red and slightly ulcerated. Cut section of all prostatic lobes shows firm, translucent, cellular tissue, irregular in outline and suggestive of malignancy. Seminal vesicles hard and show irregular islands of tissue appearing like invasive growth. Microscopically extensive epithelial new growth in all portions of prostate, extending into bladder wall and seminal vesicles.

In this patient, as in the preceding one, the simultaneous extraction of a large number of teeth was followed by a non-febrile process, evidently of an infectious nature, which in this instance produced a much more chronic condition. There is little doubt that if it had been possible to obtain an autopsy on Case III, extensive degenerative lesions would have been found in the liver and possibly in other internal organs. The hepatic lesions in Case IV were not extensive enough to interfere with the function of the liver to an extent sufficient to produce clinical manifestations of obvious hepatic insufficiency. In this patient the brunt of the attack fell upon the kidneys and resulted in a type of nephritis which the pathologist specifically states was not the ordinary Bright's Disease but an infectious process. What influence the clinically latent carcinoma of the prostate gland had in reducing the general resistance of Case IV is difficult to estimate. There was certainly no urinary obstruction, so that there was probably no local lowering of resistance to infection.

Discussion

A review of the literature shows that the cases here reported represent two types of fatal complication resulting from tooth extraction or operative interference with infected teeth. Generalized infections, however, seem to be the most common of the serious complications of dental disease. Cases III and IV of this short series appear to differ from any others that I have been able to find in the literature in the preponderance of degenerative processes, and while they are undoubtedly infectious in nature, the picture is quite a different one from the acute sepsis which characterized Cases I and II.

The different types of fatal lesion which may result from tooth infection may be grouped as follows:

(1) Direct extension of the local inflammatory process with spreading inflammation, which may even invade the mediastinum, and death from toxemia;

(2) Metastasis to neighborhood tissues such as occurs in cases of meningitis or thrombosis

*The term chronic nephritis is used to designate a progressive type of renal inflammation as distinguished from the old meaning of chronic nephritis, which in reality is a healed process.

The necrosis in the various organs is thought to be of recent origin because of lack of cell reaction.

of the cerebral sinuses following tooth extraction;

(3) General septicemia or septicopyemia, which may terminate in:

(a) Acute septicemia with or without endocarditis.

(b) Chronic septicemia with degenerative processes in the internal organs, or

(c) Prolonged septicopyemia with the formation of abscesses.

This brief article is not a plea to stop extracting infected teeth. In spite of the possibility of complications the extraction of infected teeth will continue to be the proper treatment, although doubtless there will be instances where more conservative measures such as resection of infected roots will be justifiable. After all, these serious complications are quite rare though not perhaps so rare as the literature would lead us to believe. It is important, however, that infected teeth should not be extracted haphazard and without due consideration of possible risks. As Alvarez says: "It is one thing to order a dozen extractions when a man lies crippled with an acute or chronic arthritis, and another to order them because he feels nervous, has no energy, has indigestion, or has pimples on his chin." Particularly in patients whose general resistance is lowered by chronic disease, infected teeth should be removed under the most favorable circumstances and with the most careful technique. It is of course fair to raise the question whether the technique employed has much bearing on the likelihood of subsequent serious infection. It is, I believe, customary now to follow extraction by curettage. It is a question whether this procedure does good by facilitating drainage or harm by adding to the trauma of extraction. In view of the fact that a tooth cannot under any circumstances be extracted without considerable trauma, it seems rather unlikely that curettage adds much to the risk.

RELATION OF SURGICAL POSTURE TO POST-TONSILLECTOMY PULMONARY ABSCESS

BY WILLIAM F. O'REILLY, M.D., F. A. C. S.

A PATIENT undergoes a tonsillectomy under general anesthesia. The operation and the post-operative course are uneventful save perhaps, for a slight rise in temperature on the second or third day;—a normal temperature on the following two days and the patient leaves the hospital for home. From ten to fifteen days after, the patient suddenly becomes very ill with high temperature, pain in the chest and a dry racking cough. The surgeon is forgotten and the medical man consulted,—and in this shadow of uncertainty the latter's recourse to the entire armamentarium, from microscope to X-ray, fails to stabilize a diagnosis which runs the whole gamut from tracheitis to phthisis. Later on, in the light of revealment, when the cough will have been accompanied by the expectoration of foul, brownish, purulent sputum, nothing in the therapeutic list will have been omitted from ammonium chloride to surgical resection and lung collapse. Such a picture is typical of pulmonary abscess following tonsillectomy.

To those surgeons who claim they never have a case, it may not be amiss to note that in a half dozen cases following the results of surgical procedures, by other men, of which I have heard, neither the family nor the general attending physician has been gracious or ungracious enough to apprise the operator of the post-operative conditions.

The possible causes of this post-operative condition are:—

1. Infected emboli carried to the lung through the field of operation through vascular and lymphatic channels.
2. Local and general pre-disposing causes.
3. Faulty technique.
4. Type of anesthesia.
5. And last but not least, aspiration of blood, mucous and other detritus from the field of operation.

Over the first two we have little or no control; but over the other three, and particularly the fifth, a complete review of the literature on pulmonary abscesses following operations on the upper respiratory tract under a general anesthetic is more than suggestive of a control.

It is only the fifth, viz., aspiration, that concerns this paper. And who can gainsay the frequency of aspiration abscesses usually situated in the right lung in the region of the hilum, and the infrequency of embolic abscesses situated away from the pulmonary centre and usually in the edges? As many who have written on the subject claim aspiration a most frequent cause of lung abscess,—a digest of the American literature of recent years on this subject can not only be interesting but helpful.

Since Charles W. Richardson[1] of Washington, D. C., reported his case of septic infarct of the lung following tonsillectomy in 1910 supplemented by two cases of lung abscess in 1912, our medical literature has been replete in treatises, symposia and discussions on post-operative lung abscesses, until within the last six years hardly a month passes but one or another of our widely read medical journals gives considerable space to the subject. A careful perusal of the literature presents no conclusive evidence but shows a mass of opinion,—and opinion has weight. Oc-

cupying a conspicuous part in the treatises and a still more conspicuous part in the discussions that follow is the aspiration origin, which in turn is limited to the position or posture of the patient during the preceding operative procedures and subsequent post-operative recovery to consciousness.

The importance of position could not be better expressed than by Dr. A. H. Miller[2] of Providence, R. I., and Dr. R. S. Adams[3] of San Antonio, Tex., who say respectively:—"in searching for the cause of these conditions we are concerned with the depth of anesthesia, the position of the patient." "I hope that the time is not far distant when every one connected with the operation will realize that the anesthetic and method of anesthesia comprises only one of the many factors bearing on post-operative pneumonia and lung abscess."

That unanimity of decided opinion is not present in the literature is pointed out by Dr. R. D. Alway[4] of South Dakota who suggests the dorsal position with the head lowered to prevent lung abscess following tonsillectomy:—while Dr. F. N. Bigelow[5] says—"The upright position is universally condemned by those who have never employed it." Others are more tolerant, like Dr. C. R. C. Borden[6] of Boston, who mentions that—"In the sitting position, free bleeding from the tonsillar fossa, if the patient is breathing regularly and quietly, need not be feared from the standpoint of the larynx and trachea" and Dr. George L. Richards[7] of Fall River who remarks:—"For many years I have operated with the patient in the prone position, either the Trendelenburg position or with the head thrown way back. It does not make any difference which position is used."

Those with a geographical sense of analysis as Dr. M. M. Cullom[8] of Nashville, Tenn., write:—"A larger proportion of lung abscesses have been reported in New England, where the patient has been operated upon in the sitting posture while under general anesthetic. So, it would appear that the supine posture with the head slightly lower than the body, the use of a mouth gag which assists rather than impedes respiration, the efficient use of suction, and sponging in securing a clear field, and the use of adequate illumination, afford the best security against this distressing complication"—and in the following discussion Dr. W. W. Potter[9] corroborates thusly:—"I was glad to hear Dr. Cullom say, or bring out the point of posture in the different cases, I was very much impressed with some of the operators in Boston, at the meeting of the American Medical Association there a couple years ago, to see those operators anesthetize the patient and then sit him up and do a tonsillectomy. That was rather astounding to me, that you would change the proper attitude of the patient to what was to my mind the most improper attitude that it is possible to get one in. If there is anything in the world that would add to the dangers of a lung abscess, it seems to me that it would be that particular posture." I have searched the literature diligently for even a word of refutation to these statements;—but in vain! These deductions would be fairer were it certain that New England men were no more prone to report their cases than their colleagues in other sections of the country. The writer has always been impressed when attending clinical congresses in New York, Philadelphia and Chicago with the universal use of the dorsal position in tonsillectomy under general anesthesia. I have repeatedly inquired specifically as to the use of the upright position in these cities with invariably the same answer,—that it is never used under general anesthesia.

Dr. Frances E. Haines[10] of Chicago in speaking of the infrequency of post-operative pulmonary lung abscess among Chicago surgeons claims: "The semi-recumbent position is never used by these men: dorsal position for general anesthesia, and sitting erect for local anesthesia. Dr. Shambaugh has an assistant turn the patient on the side immediately at the close of the operation"—and Dr. Logan Clendening[11] of Kansas City finds:—"also the position of the patient a most important factor." The pioneer Dr. Charles W. Richardson[1] of Washington after eleven years consideration on the subject concludes: "How to prevent this compilcation—From demonstration and the almost entire elimination of abscess of the lung in the last six or seven years in my operative work under general anesthesia, I feel that post-operative abscesses of the lung can be prevented by placing the head of the patient well down and using the suction apparatus. In operating under general anesthesia I elevate the foot of the bed and have the patient's head well dependent. Since following this plan we do not have lung abscesses following general anesthesia. In the last two years I have done more tonsillectomies under general anesthesia than ever before and have not had a lung abscess following these operations"—and Dr. Thomas E. Carmody[12], of Denver confirms by—"Dr. Richardson[1] has spoken of the position, and I believe that is very important. For a number of years we have used the semi-Trendelenburg position, which is practically the same as that described by Dr. Richardson[1]. During the last few years someone mentioned that we never heard of lung abscesses when we operated with the patient in the old Rose [dorsal decubitus with head well dependent]* position."

Reviewing the literature of six different authors in as many different years, I find that although Balboni's abscess case was operated in the upright position, J. Prenn favors this position,—while Sewell, Vietor, Walker and Scholz

*Author's words bracketed.

favor the dorsal position with the head thrown back.

Besides those named below, a complete survey of the literature shows that twenty others have written on the subject of pulmonary abscess following tonsillectomy, presenting other phases, and pre-existent and co-existent complications as exophthalmic goitre, pulmonary tuberculosis, cholecystitis, non-pulmonary tuberculosis, hemorrhage and prolonged anesthesia,—failing to mention posture. To all these, I have written a questionnaire concerning the posture employed in the case cited or the posture favored by the writer. Twelve relevant replies are noted as follows: three cases were operated in the upright and five cases in the horizontal positions. Four writers favored the horizontal position. None favored the upright position.

Dr. Lewis Fisher[13] and Dr. A. J. Cohen[13], of Philadelphia, are inclined to lay the whole responsibility at the door of the surgeon when they write: T. A. McKenty says, "Aspiration accounts, I believe, for the majority of these cases." Dr. L. W. Dean explains his freedom from this complication as posibly due to the fact that all his patients taking general anesthetics are "operated on their side, with the mouth lower than the larynx." Dr. H. A. Allen says, "I refer no case of tonsillectomy to a nose and throat man who uses general anesthesia unless he guarantees to me that the patient's mouth and head will be held lower than the rest of the body." But Dr. A. A. Hayden[14] of Chicago believes "that not all aspiration takes place on the operating table. When a patient is put to bed, especially if, as Dr. Welty has suggested, he has been deeply narcotized, it is very possible that a considerable amount of blood and mucous can be inspired into the lungs after the patient has been returned to bed. For that reason the elevation of the foot and the depression of the head of the bed is very essential;—" and Dr. Mary E. Botsford[15] of California contends: "Whatever posture be required by the individual surgeon's technique, the anesthetist should be responsible for that immediately following the operation and until the patient is properly placed in bed. Particularly in children where some adenoid bleeding invariably persists for a longer or shorter time, the correct posture is a modified Sims, care being taken not to draw the under arm backward—to prevent burying the mouth and nose—and with the upper leg and thigh flexed to maintain the position which facilitates drainage while the patient is unconscious."

And if all are insistent as to the one proper position for anesthesia recovery, what is more logical than to assume that we should agree that the same position is more rational during the more hazardous anesthesia induction and surgical manipulation stages?

In conclusion, after a review of the quantity of material written on the subject of pulmonary abscess under general anesthesia, one cannot fail to be convinced by Dr. C. N. Chipman[16] of Washington, D. C., who argues—"the head should always be down and the patient should be returned to his room on his side, with the head down. Another condition which invites Aspiration under deep anesthesia is having the head level with the body or elevated, so that there is nothing to prevent blood and mucous from entering the larynx": and further reasons—"during a tonsil operation, when the patient is wearing a tracheotomy tube, if the head is not lowered and blood is allowed to collect in the pharynx, some of the blood will be expelled through the tracheotomy tube."

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THE MENACE OF DIPPED MILK

Dr. L. I. Harris, Health Commissioner of the City of New York, contends that dipped milk presents definite problems relating to health and that milk sold by this method is an "abomination and menace" for 30 per cent. of the dipped milk sold in New York is adulterated.

The explanation is found in the fact that the opening of cases of milk and dipping the milk is done by pedlars who are not clean. Milk so distributed is spoken of by Dr. Harris as "bootleg milk." The Commissioner regards the sanitary production of milk of little advantage if it can later be ladled from the cans by the distributors.

THE CONSERVATION OF LIFE AND HEALTH BY MEANS OF PERIODICAL HEALTH EXAMINATIONS

BY FRANCIS H. MC CRUDDEN, M.D.

I

ONE of the most impressive features of modern medicine is the remarkable practical success in conserving life and health that has resulted from the advances of the last half century. But it is becoming more and more evident that this success has been due practically entirely to the control of acute infectious disease and to the conservation of young lives. The mortality in middle and late life from diseases of the circulatory system and from so-called chronic degenerative disease shows a steady and alarming increase. Recent advances in our knowledge of chronic disease have been as great, broadly speaking, as those in acute infectious disease. But the practical application of this knowledge to the conservation of the very valuable older lives has not yet shown results. The two factors most responsible for the conquest of acute infectious disease have been the recognition of the importance of preventive medicine and the education of the general public to this knowledge. I believe the same two factors are destined to play an equally important part in the attack on chronic disease. In my opinion the recognition of the importance of the periodical health examination as a feature of preventive medicine in chronic disease and the education of the general public along this line is the big medical job of the immediate future.

The most skillfully presented plea for periodical health examinations that I know is the series of talks delivered in 1861 at the Royal Infirmary for Diseases of the Chest in London by Horace Dobell, physician to the Infirmary, entitled "Lectures on the Germs and Vestiges of Disease and on the Prevention of the Invasion and Fatality of Disease by Periodical Health Examinations."*

Dobell says (p. 30):

"When I commenced private practice myself, I had devoted more time to the study of medicine in Hospitals and Medical Schools than most students have at their disposal; . . . and I naturally expected to find myself quite at home with any cases which might present themselves in private practice. To my surprise and disappointment, however, I found myself surrounded by complaints which appeared quite strange to me and I kept vainly hoping that each new case might be placed under one of the well known headings so familiar to me in the hospital ward, the outpatient room, the book, or the lecture theatre, and the management of which I had so carefully learnt."

"Cases of pneumonia, apoplexy, variola, fever or the like were positively refreshing, when, from time to time, they came in their well known features. But these were few and far between; whereas I found the principal part of my time occupied with diseases or states of health for which I could find no special names, and for which I had learnt no plans of treatment. Yet daily experience left no room to doubt that I was in the very midst of those incidents which play so large a part in determining the happiness or misery of human existence."

*Published in book form in 1864.

The body of his lectures is then devoted to developing and pointing out the practical implications of the thesis that these conditions

"are intimately connected with the definitely marked diseases to which names have been alloted."

Dobell begins by laying down the general law that man has an inherent capacity or "vital mode of force" (V. M. F.) competent to overcome diseases and bring him to a ripe old age.

". . . as regards the repair and reproduction of the human machine everything is provided within the functions of the organism itself which is necessary to the attainment of the ultimatum" (ultimatum = ripe old age) (p. 21).

He next points out that there are certain limitations to this capacity. The italics are Dobell's.

(P. 32.) "There is within the organism a power to preserve life in nearly all forms of disease, *under certain circumstances*" . . . "nearly all forms of disease may terminate in death *under certain other circumstances*" . . . "and whereas nearly all forms of disease, failing to destroy life, may leave some damage to the organism *under certain circumstances*, those same forms of disease may occur *under other circumstances* and leave no injuries behind."

He then inquires as to the nature of these limitations:

(P. 33.) "What then are those all-important circumstances associated with such different results? In other words how is it that the same disease, so called, may appear, and disappear, leaving no loss of life, no damaged part, in one person, at one time; and in another person, or in the same person at another time, the same disease shall destroy life or leave a damaged part?"

And he answers his inquiry:

"THE V. M. F. MAY BE ALTERED IN ITS ATTRIBUTES OF QUANTITY AND QUALITY BY NUMEROUS CAUSES."

(P. 47.) ". . . These causes are—*principally*—the vestiges of disease, existing or *coetaneous diseases*, and the conditions of life. By the conditions of life, I mean the circumstances which surround the living being, and which are not confined to, but include the conditions of existence. . . ." ". . . the vestiges of disease, coetaneous diseases and the conditions of life may determine the efficiency or non-efficiency of the V. M. F., to prevent or arrest the invasion and progress of premature destructive changes in the organism, to secure its repair when damaged. . . ." ". . . abnormal conditions of the V. M. F., either congenital or acquired, may be changed by changes in the conditions of life and by

means which exert an influence on the vestiges of disease."

(P. 66.) ". . . through the influence of these several conditions, then singly or combined, the V. M. F. may be brought to various degrees of *defectiveness*. Thus in one case it may be only so defective as to lose the power to protect the organism against the invasion of disease, and yet be competent, ceteris paribus, to bring that disease to a favorable termination. In another case, it may be powerless to prevent either the invasion of disease, or its termination in death. In the first case, the defect of the V. M. F. will be a *predisposing antecedent* to disease, in the individual, in the second case it will be a *cause of fatality*."

(P. 141.) "Those conditions not recognized as disease but which are not health are the *faint expressions* of those morbid physiological states, while still deficient in the conditions necessary to complete their development into the recognized features of disease."

"The multifarious and anomalous functional derangements which puzzle the physicians and make martyrs of the patients, depend, for the most part, upon the influence exerted by these morbid physiological states over the ordinary incidents of animal existence, which are thereby modified, colored and distorted."

"During the whole of the time that the physiological conditions are disturbed, there is a greater or less defect in the V. M. F., and this defect, therefore, exists at a period anterior to what are generally understood as structural changes."

As a telling argument in support of his theory Dobell points out that while these essential antecedents do not correspond at all with the conditions given as the chief causes of death in a "recent" (sic, 1848) mortality report of the registrar-general of England such conditions are often as potent in determining death as the ultimate cause recorded on the death certificate.

(P. 148.) ". . . in the large majority of deaths from disease, *the fatality is due, not to the disease itself, but to the vestiges of some pre-existent disease*."

(P. 149.) ". . . *the vestiges of disease stand first among the causes of death*."

He points out in conclusion

". . . we have at length arrived at those *wells and springs of disease and death*, which we are so apt to neglect while busy with the disasters of which alone they have been the cause."

(P. 151.) ". . . In these facts, gentlemen, you will not fail to see the extreme importance which we ought to attach to . . . *those slight deviations from normal health* which are commonly looked upon as of such small importance as to be unworthy of the physician's thought and care. . . ."

(P. 152.) ". . . it is in this occult and evasive stage of germination that the defect is most easily and effectively to be remedied."

Dobell then makes his recommendation.

(P. 154.) ". . . the manner in which man is to exercise his instrumentality for the prevention of disease, the prevention of the vestiges of disease, and the prevention of fatality in disease, is to search out these earliest evasive periods of defect in the physiological state, and to adopt measures for their remedy. This appears to me to be the highest, the most enobled duty of the physician, calling for the most abstruse knowledge of the science of life, the deepest experience in disease, the keenest exercise of the perceptive faculties, the calmest, most far-sighted reasoning, and the wisest judgment,—a duty as much above the management of acute disease as to rule an empire is above fighting a pitched battle." ". . . patients never think of consulting their doctors till these conditions of impaired general health have advanced . . . into some form of disease . . . thousands of people, believing themselves to be in health, are, nevertheless, undergoing these early, occult, and evasive stages of defect in the physiological state; . . . such persons may be considered to be in health, not only by themselves, but by any one accustomed to associate with them even though it be a physician, and . . . even if they submit to a medical examination, as ordinarily conducted, they may be declared to be in health."

"I wish, then, to propose, as the only means by which to reach the evil and to obtain the good, *that there should be instituted, as a custom, a system of periodical examinations, to which all persons should submit themselves, and to which they should submit their children*."

Dobell did not forget certain important practical details, for he published the forms that he used in his health examinations from 1852 to 1858 (p. 193); and he says:

(P. 155-156.) "With regard to the pecuniary question, it is only necessary to observe that of course I do not expect that any man in good practice, whose time is profitably employed, could conduct such an examination and give such advice for the usual consultation fee. That is, of course, out of the question. Every man who attempts to follow out the plan, will, I hope, require such a fee as shall enable him to give the necessary time and consideration to every case."

II

Dobell's thesis may be briefly modernized in two statements.

(1) The "cause" recorded in a death certificate is usually merely one of the factors, the terminal member of a series of many, which determine life duration.

(2) Preclinical diagnosis*—the prompt recognition of early members of this series of factors—followed by suitable preclinical therapeutics may prolong life.

Dobell's presentation of his theory though somewhat archaic in phraseology is so good that we can scarcely improve upon it. But the advances in medical science of the two generations since Dobell wrote have contributed much to support Dobell's argument.

We now have abundant evidence demonstrating the influence of supposedly minor impairments on life duration. There is no need here of elaborating on the significance of focal infection as a factor in chronic disease. But the significance of such impairments as a slight trace of albuminuria, slight glycosuria on one or two occasions, so-called functional heart murmurs, slightly advanced blood pressure or pulse rate, slight over-weight, a waist greater in girth than the chest, certain characteristics of the personal and family history, habits, occupation

*A term coined by Exton, W. Individualized Longevity Promotion. (Preclinical medicine.) Jour. of the Am. Med. Assn., 1923, 82, 591.

and environment in influencing life duration is not so well appreciated. The practising physician so frequently meets with such characteristics in individuals whose life duration *so far as he can determine* is normal that he may believe them unimportant. But the life insurance medical director knows better; by comparing the mortality of deceased policyholders in groups which are homogeneous with respect to each of these characteristics it has been shown that they do influence mortality. This phase of life insurance medical science will play a big part in the medicine of the future, but it is too big a topic to enlarge on here.

Every physician must now be familiar with the substance of the investigations so thoroughly confirming Dobell's belief that the incidence of these so-called impairments among supposedly healthy individuals is high.

It is, too, common knowledge that the chronic degeneration disease of which these so-called minor impairments are the earliest accompaniments is of great and increasing importance as a cause of death. Statistics of life insurance companies show a decreasing mortality among the younger entrants (representing largely acute infectious disease) and an increasing mortality among the older entrants (representing chronic degenerative disease). Census figures show a steady increase in the proportion of death from chronic disease of the heart, vessels, and kidneys. Recent figures* show that an adult has 33 out of 100 chances of dying of disease of the heart or vessels and 12 chances of dying of chronic nephritis; if to these we add pneumonia, so often an end stage of cardio-vascular disease, and cancer, tuberculosis and diabetes in which early diagnosis is so important we have a total of 65 chances out of 100 of dying from some disease which a health examination might disclose early enough to prolong life.

We are far better equipped in 1926 than was Dobell in 1861 to appreciate the importance of "preclinical therapeutics." The discoveries of the second half of the nineteenth century concerning the structural changes associated with chronic disease discouraged the clinician with a realization of his incapacity to repair these structurel changes. The studies of the present generation of physiologists and biological chemists have made us realize that the most important objective in the treatment of chronic disease is, as a rule, improvement in function rather than repair of structure a conclusion epitomized in the statement "most of our fashionable pathology is the paleontology, not the biology of disease."† Chronic disease tends toward what we may describe as broken compensation, a loss of equilibrium between the tasks required of an organ or group of organs and the capacity to perform those tasks. By diminishing the strain on an organ and so decreasing the work required of it, and at the same time stimulating it to utilize its power more effectively, thereby increasing its capacity for work we may restore equilibrium between tasks and the capacity to perform them. We may not, often cannot, restore anatomical integrity; but we may restore functional efficiency, that is, make an organ competent to its tasks. The difficulty of restoring functional efficiency is proportional to the *extent* of departure from the normal; and this is proportional, broadly speaking, to the duration of the condition. The therapeutic significance of the periodical health examination in detecting chronic disease in its earliest, mildest stages is evident. The diagnostic-therapeutic function of the periodical health examination can be broadly expressed as an attempt to appraise an individual's functional efficiency in order that we may be able to adapt the individual to his environment and the environment to the individual.

*The Probability of Dying Eventually from Certain Diseases. Statistical Bull. Metropolitan Life Ins. Co., 1924, col. 12, p. 8.

†Gould, G.: A System of Personal Biological Examinations the Condition of Adequate Medical and Scientific Conduct of Life. Jour. of the Am. Med. Assn., 1900, 35, 134.

III

Some concrete illustrations from my own experience of the functions of the health examination may be of interest. In my last 500 cases I found an average of about 4½ impairments per person. I found no one without defects worth recording and discussing.

Among these 500 there were only 9, or 2 per cent. with a single impairment, and only 28, or 5 per cent. with but 2 impairments. Not all of these 37 individuals were excellent for sometimes the single impairment was a serious one. There were only 17, or 3½ per cent., whom I recorded as excellent. Of these 17—who showed a total of 39 impairments, an average of over 2 each—more than half were either of the wealthy, intelligent, careful type who think a great deal about their health, take frequent health examinations, and are rather vain of their physical excellence, or members of groups whose occupation indicates selection for physique—traffic policemen, young college athletes, Canadian nurses. Here is a brief summary of the findings in what I consider *the seven most nearly perfect* physical specimens in the whole 500:

(1) A wealthy, intelligent woman who has a health examination twice a year. Her vessels show arterio-sclerosis; she gulps down her meals rapidly; both external auditory canals blocked with wax.

(2) A wealthy, intelligent woman who has frequent health examinations. She has just had her teeth X-rayed as a precautionary measure, and has had her toes examined by a chiropodist. She has migraine and imperfect vision.

(3) A wealthy, intelligent woman who has frequent health examinations. Her tongue is coated; she is high strung, and nervous; her extended fingers

show a distinct tremor; her knee reflexes are very lively; she has corns.

(4) A wealthy, intelligent manufacturer who has frequent health examinations. He has poor eyesight, not properly corrected; his posture is bad.

(5) A husky traffic policeman. He is 8 per cent overweight; he gulps down his meals hastily, and suffers from gaseous eructations and frequent belly ache.

(6) A fine specimen of Nova Scotia nurse. She is 10 per cent overweight. I classified her as the best specimen I had seen until at the very end of the examination I found that she had marked flat feet. When questioned she admitted symptoms referable to her flat feet.

(7) A young college athlete 6 feet 2 inches tall just entering Harvard. He is 15 per cent underweight; he gulps down his food hastily.

A review of the remaining ten "excellent" cases makes me wonder if I was not overliberal in marking them "excellent"; for I find one man with 5 impairments including an inguinal hernia large enough to require immediate attention; one man 28 per cent. overweight whose teeth need immediate attention; one with troublesome hemorrhoids; two with marked flat feet; one with large ragged tonsils; and one woman with enlarged lymph glands and rectal hemorrhage.

Thinking it might be of interest to illustrate with an average case I picked one out at random. It turned out to be worse than the average. But I present it nevertheless because there is no average case; each stands alone as an individual case; and this one is a good example of a common type:

This is a high-colored, round-shouldered, flabby-muscled, pot-bellied, overweight man; his lips are bluish, his abdominal circumference is greater than his chest circumference; his posture is wretched; he has scoliosis. His blood vessels are thickened, and tortuous; his pulse is slow and intermittent, and the tension is irregular; the blood pressure is 188/120; the heart is enlarged; and a systolic murmur can be heard all over the precordia. His glasses are not corrective; he is deaf in one ear; he has large ragged tonsils, a long, heavy scrotum with varicocele, pyorrhea, caries, and very dirty teeth. His working hours are long and irregular, and he has no recreation. He eats very rapidly; he eats much carbohydrate food, meat at almost every meal, not much green vegetables; he drinks coffee twice a day, and smokes two cigars and six pipes of tobacco every day. He has a bad cardio-vascular family history. That man thought he was well, came for a health examination and had no complaint except that his knees ached sometimes. But on questioning he admitted that he was tired and sleepy all the time.

Some of the worst cases were very bad; here is an example:

This is a man 47 years old who has no regular time for eating his meals; he gulps them down hastily at any old time. He eats meat three times a day, drinks plenty of beer and a half pint of whiskey a day. He smokes 7 or 8 pipes a day. He takes no recreation or exercise, never cleans his teeth and rarely bathes. He is constipated. He has nasal catarrh and chronic bronchitis; he is hoarse all the time and deaf in one ear. His teeth are very dirty, covered with tartar and show caries and pyorrhea. He has uncorrected presbyopia. His external auditory canals are blocked with wax. His skin is covered with acne vulgaris. He is overweight and the circumference of his abdomen is greater than that of his chest. His pupils are irregular, unequal in size and do not react to light. He has gonorrhoea and syphilis.

From his own experience every physician is familiar with examples of the detection of unsuspected diabetes, nephritis, hypertension, tabes, heart disease, hyperthyroidism, syphilis and other similar conditions which may give rise at first to no symptoms and only such signs as are not obvious to the layman. So much, too, has been written regarding habits and other elements of personal hygiene as factors in incipient disease that the topic need not be further expanded here. Less obvious examples of potential disease are illustrated by the four cases which follow. I believe that preventive measures can postpone the potential apoplexy which menaces these individuals.

(1) Miss ———, whose father died of arterio-sclerosis at 50 and whose mother is under treatment at 57 for the same condition, is an overweight woman of 35 with a blood pressure of 140-100.

(2) Mr. ———, whose father, paternal uncles, and grandparents all died rather young of hardening of the arteries, is now 32; he denies all symptoms, insisting that he is in the best of health. But his arteries are palpable, he has a slight systolic murmur; his blood pressure is 146-84; and he has several minor impairments and unhygienic habits.

(3) The Misses ——— are two sisters, one 42, the other 45, whose parents died of apoplexy at the age of 60 and 62. The blood pressure of one is 142; of the other 148. Both have minor impairments, unhygienic habits and environment.

Just as the "bedside clinician" learns to recognize certain groups of signs and symptoms as typical of certain disease syndromes so the "health doctor" becomes aware of certain groups of signs and symptoms as typical of syndromes in the twilight zone between health and disease. Here are examples of the preclinical diagnosis of two very common forms of potential disease. A good jolt will not hurt the first man; the second man has "effort syndrome" and needs a generous measure of reassurance with his advice.

(1) Mr. ——— is an intelligent school teacher who thinks he is in good health but wants to be inspected and advised. He is a big, high-colored, round-shouldered, overweight man in the 40's whose waist measurement is greater than his chest. He has external hemorrhoids and flat feet; his only complaint is aching knees when he stands much. His blood pressure is 144-100; his heart sounds are of rather poor quality; his heart size is a little large; and a short systolic murmur can be heard. He eats meat twice a day and much bread, potatoes and other carbohydrates; and leads an indoor sedentary life.

(2) Mr. ——— is a rather pale, underweight young man. He looks tired and somewhat anxious and apprehensive. His extended fingers show a distinct fine tremor; his knee jerks are very lively. His blood pressure is around the upper limits of normal; his pulse rate is advanced and shows sinus respiratory arrhythmia. Auscultation

shows a heart murmur of the functional type. He complains of headaches and dizzy spells and says he sometimes faints; he gets tired easily. He smokes too much and works very long hours as an athletic instructor.

In all the foregoing examples of the problem of balancing tasks and capacity, of adapting individual and environment, both sides of the equation may be considered variables alterable to suit the requirements of the therapeutic equation. But health and disease are relative terms; the question of whether an individual is healthy or not is often as much a matter of definition as of fact. Sometimes the task or environment is a fixed quantity and we are called upon to determine if the capacity of the individual is such as to make the equation balance. We are all familiar with examples of this kind in the special physical examination to determine an individual's fitness for the army, civil service appointment, or life insurance policy. We are less familiar with the request for an examination of fitness for some special purpose made on the initiative of an individual himself. Here is an example:

The chief State representative of an organization of national scope who had been very successful in developing the work in his own State was offered the opportunity of considerably increasing his income by developing the work in an adjacent State. He was a middle-aged man, who believed himself in perfectly good health, but his income was ample, so that he was not especially eager for the new work. He came to me to find out if a physical examination would disclose any reason why he should not undertake the increased responsibility. The examination showing no serious impairments, he undertook his new work without any disturbing doubts as to his physical capacity.

IV

Though I have said nothing specific as to the proper way to make a health examination it is implied throughout that the word *thoroughness* summarizes the requirements. A quotation from Billings shows how few people do get thorough examination.

"I have always been struck by the fact that patients who stripped sometimes did it reluctantly and often made a remark that they had never been unclothed for examination before. So for two years I gave my secretary every night the number of new patients who had never been disrobed for examination before. During those two years there were approximately 500 patients, the members of doctors' families. Over 75 per cent of the total patients, members of doctors' families included, had never had their clothes off in an examination and every one had suffered from a chronic disease. . . . They were in age from childhood to the octogenarian that had never had their clothes off for medical examination until I stripped them in my office." *

If this illustrates the casual examination given to the sick patient what degree of thoroughness can supposedly healthy individual expect? The difficulty is not so much that the physician does not know how to make a health examination as that he does not take the necessary time and pains. I believe the first step in overcoming this difficulty is to convince him of the need for perodical health examinations.

*Billings, F.: In discussion of paper by M. Harris, Direct versus Indirect Service. Am. Med. Assn. Bull., 1925, 20, 11.

MALARIA IN NEW ENGLAND

BY MILTON J. QUINN, M.D.

"If we were to depict the dissemination of Malaria upon the globe, we would paint it as a black belt girdling the tropical world, extending its lesser shadows in tongues toward the temperate zones."[1]

Dr. Osler[2] said: "No infection, except perhaps Tuberculosis, compares with it (Malaria) in extent of distribution, or its importance as a killing and disabling disease."

The estimated six million annual cases of Malaria in the United States heavily shades our own "tongue" from the black belt of the tropics. Fortunately, however[3], "the gravest injury from Malaria is not in the death rate but the sick rate."

This paper deals with one of those "lesser shadows," which reaches well into New England. The purpose is: 1. To review the history of Malaria in New England. 2. To report its recent incidence in certain localities. 3. To encourage further study of Malaria in northern United States.

HISTORICAL

Malaria was known to the Egyptians. Hippocrates described its quotidian, tertian, subtertian, and quartan characteristics. Little else was added until the discovery of Cinchona bark in 1640. A few years later Torti[4] observed marked benefits when the bark was given in certain types of Intermittent Fever.

Causes of Malaria exhausting description, were held reponsible. Hippocrates and later Galen spoke of the vagaries of the "bile," Darwin of anabolic and katabolic changes, Borelli irritation of heart fibers, Werlhof movements of the earth, Mead the lunar influence, Bailley the diurnal change of the body awake and asleep.

Inhabitants of the Roman marshes suspected the bite of the mosquito for centuries. Natives of West Africa were certain that insect bites gave them fevers.

In 1695 Lacissi presented the Miasm theory. This was well supported until the middle of the

19th century. Mitchell[5] was then bold enough to state "the only theoretic view for Malaria to which I incline is a living organic cause, capable of reproduction by germs . . . . . elaborated and re-elaborated outside of the body and independent of its (the body) agency."

Meckel[6], in 1847, described ovoid masses of pigment in the blood of those dying from Intermittent Fever. Virchow confirmed this a year later. The relation of the pigment to Malaria was discovered by Hischl in 1850.

Laveran, a French army surgeon, stationed in Algeria, in 1880, proved that the above pigments were parasites. Ross, in 1896, following the suggestion of Manson in 1894, demonstrated that the Anopheles is the intermediate host of the Malaria parasite.

A wealth of investigation has since indisputably confirmed those pioneers, and added much to our knowledge of Malaria.

NEW ENGLAND

Malaria was widespread over Europe in 1558[7]. The first recorded appearance in New England was in eastern Massachusetts in 1634[8]. Further outbreaks in the same state came in 1647, '50 and '68. Connecticut's[9] first cases were in New Haven in 1671 and '78. Frequent recurrences[10] are described in southwest New England and Eastern Massachusetts during the 18th century.

Maine's[11] earliest cases were at Biddeford, 1760; those of New Hampshire at Portsmouth, 1737, with sporadic cases until 1800. Kensington, N. H., reported Malaria in the early 19th century.

The first reported outbreak in Rhode Island[11] was near Providence, 1777-80. An encampment of soldiers, "who had never been out of the country" were the victims.

Dr. Oliver Wendell Holmes'[11] painstaking study of 1836 further showed that Intermittent Fever "used to be common" even on the borders of Lake Champlain in Vermont.

Three distinct epidemics are described in New England, 1790-1800, 1836-37, 1879-80[15]. Dr. Griswold[10] states there were severe epidemics in the vicinity of New Haven and in rural Connecticut from 1860-80. At New Haven in one factory in 1870, 63 of 65 workmen had Malaria[16]. By 1880 Malaria was endemic in three-fourths of Connecticut[9].

This invasion had followed the new railroad construction and the Connecticut River, reaching Hartford by 1876, and the Massachusetts line by 1880[1].

Malaria was quite common in Boston about 1893[11]. Ten years later several new cases weekly were seen at the Massachusetts General Hospital[13].

Investigation of 152 Massachusetts cities by Dr. Cook in 1890 showed 86 to be reporting Intermittent Fever. It was more or less epidemic in 52 of these[21].

At Greenwich, Connecticut, 1912, there was an epidemic of several hundred cases[13]. The exact number was not recorded. The following year there was an improvement with 300 recorded cases.

The office of the Surgeon General of the Army has kindly furnished me the following interesting data[17]. During the period of the War army, April 1917 to December 1919, there were 84 cases of Malaria in the troops while in New England. There were 216 cases in soldiers whose homes were in New England. The sources of these infections were not determined. Each New England state was well represented in the above figures.

Questionnaires were mailed to the Board of Health of each New England state, to those of 65 representative towns and cities, and to a number of hospitals. The results are in Table No. 1.

Accurate statistics of Malaria in New England today are difficult to obtain because,

1. Malaria is seven times as prevalent in rural districts as in urban[3].
2. The disease is often benign, self treated or self limited.
3. Malaria is not reportable in all New England states.
4. Every case is not reported in states having a law.

Safety is assured in the presumption that many cases of Intermittent and Remittent Fever of the older days were not Malaria as we know it today. Even today the statistics of Malaria can often be taken with a grain of salt. However, the evidence indicates that Malaria infiltrated the New England States especially the southern section.

Many of us today in New England at least, are remiss in not recognizing Malaria more frequently. We have been imbued with the fallacy that the Anopheles rarely wings its flight over the Mason-Dixon line and that the parasite does not develop in our cooler clime.

It is true Malaria almost entirely the Tertian type is no longer epidemic, so severe, or so widespread in New England, as twenty-five and more years ago. Nevertheless endemic foci do exist and other contributing factors are still present.

Dr. Britton[18] has found the Malaria bearing Anopheles in all sections of Connecticut. The Federal Department of Agriculture states the Anopheles can probably be found in New England at all levels below 2,000 feet[17].

The presence of the Anopheles is not proof positive that Malaria is nearby. It is but the connecting link in the Malaria patient—mosquito—non-infected person, chain.

Immigration from the malarious sections of the world has supplied New England with the parasite. Rigorous winters, cool summers, san-

itation, drainage, universal quinine medication and improved housing have seriously intercepted the life cycle of both mosquito and parasite. The present study shows, however, that at least some parasites and mosquitoes survive even a New England winter.

Since then, there are endemic foci of Malaria in New England, the Anopheles does thrive here in many sections, and man through modern activities is frequently exposed to the bite of the Anopheles, it seems reasonable to suspect a higher incidence of Malaria in New England than

TABLE 1

MALARIA IN NEW ENGLAND, 1910-24

As Reported by the Following Boards of Health and Hospitals

Source of Report	Cases	Origin	Anopheles	Remarks
Maine Board of Health	Not reportable	Unknown	Not given	"Occasional in coast"
Portland	0		" "	
Bath	1	Florida	" "	
Biddeford	0		" "	
Maine General Hospital (Portland)	0		" "	
Eastern Maine General Hospital (Bangor)	6	Unknown	" "	
New Hampshire Board of Health			" "	"Not reportable"
Nashua	0		" "	None
Hanover		"Outside"	" "	"1 or 2 cases a year"
Manchester			" "	"None in years"
Concord	0		" "	"None"
Elliott Hospital (Manchester)	0		" "	"None"
Vermont Board of Health		Imported	" "	Not reportable
Burlington	0		" "	
Bellows Falls	0		" "	
**Massachusetts Board of Health*	445	No report	Yes	Mostly tertian
Boston	280	Local and imported	Rare	"No foci"
Fall River	35	Imported	No	
Framingham	13	Unknown	Not given	Much many years ago
Holyoke	0		" "	
Lowell	6	Unknown	No investigation	
Pittsfield	1	Imported	No	
Quincy	1	Unknown	Yes	
Waltham	0		Not given	
Worcester	9	No reply	No	
Massachusetts General Hospital (Boston)	285	Not given	Not given	All types, mostly tertian
Mercy Hospital (Springfield)	14	" "	" "	
Connecticut Board of Health	193	" "	Yes	Since 1917
Greenwich	81	" "	Yes	Since 1916
Hartford	23	Unknown	Yes	
Manchester	14	Local and imported	Yes	Since 1922
Waterbury	1	Local and imported	No	
New Haven Hospital (New Haven)	102	Not given	Not given	
Willimantic	0	0	0	None since 1896
Rhode Island Board of Health	No reply			
Providence	7	Not given	Not given	
Brown University (Providence)	6	" "	" "	
Westerly	0		" "	

*Since 1917 only.

Man, then, is the third link in the malaria chain. Urban and rural populations are no longer confined. This is the great "out of door" and "back to nature" age. The city workers flock to the open spaces. New England is the so called "playground of America" in the summer. The resorts at the shore, on the lakes, along the rivers and in the mountains, are well supplied with the human link. Even the highways are fringed with camping tourists from all sections of the country.

the available statistics indicate. Further inquiry is needed.

STUDY OF ENDEMIC FOCUS

On the edge of Manchester, Connecticut, is a shallow stagnant pond, one half acre area. Several hundred mill workers and families live within a half mile radius of this pond. One of these, an Italian who had not been out of the state in 10 years, in August, 1924, developed a typical attack of Tertian Malaria. Plasmodium vivax was found in his blood.

A survey of this section was made. Forty individuals were visited. A brief pertinent history was obtained, an examination of the spleen made, and blood smears, totaling 73, were taken. The sexes were evenly divided. The ages varied from 2½ months to 40 years.

11 gave histories of recent chills and fever, or an illness with fever. Of these, one para-typhoid and one suppurating appendix were ruled out. 6 had enlarged spleens.

TABLE 2

MALARIA CASES, MANCHESTER, CONN., 1924

Patient	Sex	Age	History	Cl. Course	Parasite	Remarks
*M. M.	M	40 yrs.	+	+	Tertian	
B. M.	F	42 "	+	+	"	
D. V.	M	37 "	+	+	"	
T. V.	M	3 mos.	+	+	"	
M. Mc.	F	34 yrs.	+	+	0	After
M. B.	M	32 "	+	+	0	[quinine
†M. O'B.	M	20 "	+	+	0	
M. K.	M	23 "	+	Unknown	0	
H. B.	M	28 "	+	"	0	

*Acute exacerbation in July, 1925. Was taking quinine. No parasites found.
†Acute exacerbation in July, 1925. Tertian parasites found.

Table No. 2 shows the principal results of the survey. 9 were diagnosed as Malaria. All gave histories of a recent illness simulating Malaria of the tertian type. Each was definitely improved with successive large doses of Quinine. The observed clinical course of 7 was that of typical Tertian Malaria. 4 had Plasmodium vivax in their blood. None had been out of the state for several years. The child had never been out of the city.

Case M. M. was seen July, 1925, with a typical exacerbation. He had taken several large doses of Quinine and no organisms were found. Case M. O'B. was seen at the same time with similar symptoms. Plasmodium vivax, which were absent in August, 1924, were now found in great numbers.

CONCLUSIONS

1. Malaria has existed in New England since 1634.
2. The incidence and severity is less than in the 18th and 19th centuries.
3. Malaria is still endemic in southern New England.
4. Malaria is probably more common in New England than the available statistics indicate.

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NEW ENGLAND SURGICAL SOCIETY

NOTES ON THE TREATMENT OF SURGICAL COMPLICATIONS OF DIABETES MELLITUS*

BY ROBERT C. COCHRANE, M.D., F. A. C. S.

DIABETIC surgery divides itself into two great classes, namely: that of election and that of necessity. Insulin has enlarged the field of elective surgery; it has not in the slightest degree removed the necessity for prompt measures in the presence of sepsis.

The progress made in the treatment of diabetes since the war has been tremendous. A great deal of this antedates the discovery of insulin. Even in the pre-insulin era patients desperately sick as a result of surgical complications, under proper medical guidance, stood operation remarkably well. None of our patients died as a result of operation and none of them went into diabetic coma. The adoption of insulin has made the task easier but the basic principles of surgery are not affected by it. There is a danger of leaning too much on insulin rather than on sound surgery and of falling into a state of mind that permits procrastination, with dire results for the patient.

It is not our purpose to weary you with statistics, but rather to attempt to emphasize certain points which have arisen in the treatment of a large number of cases. All of our cases have been medically treated by Dr. Joslin, or one of his present or former associates. The medical and surgical treatment go hand in hand and the importance of a skillful medical associate needs no argument.

*Read at the annual meeting of the New England Surgical Society, Springfield, Mass., October 2, 1925.

With elective surgery this paper is not greatly concerned. Insulin unquestionably has made this type of surgery a more certain thing. One has to consider the patient's age and general condition, the duration and severity of the diabetes and the probable extent and duration of the proposed operation. One should not lose sight of the fact that elderly patients present other risks than diabetes, and a series of operations in non-diabetic patients beyond middle age carries a definite risk.

Given favorable conditions, a favorable outcome may be expected with reasonable certainty. Insulin aids not only in the preparation of the patient, but is a safeguard against acidosis following the administration of ether.

This brings up the subject of anaesthesia. It is pretty generally admitted that chloroform is not suitable for use in diabetics. The writer has used it once in a child but in a very minute quantity for the incision of a small abscess with no bad results.

Whatever operation is performed should be as short as possible and if ether is used an effort should be made to limit the amount. Insulin has made its use safer. It is not ideal and in our opinion should be avoided if possible. It is not justifiable to use it if other safer anaesthetics can be used to advantage. I have given it to but one patient. He was a very sick man with poor kidneys, a gangrene of the foot and had a mid thigh amputation. Neither spinal anaesthesia or gas-oxygen were successful. He was given ether and did well. Besides upsetting the metabolism, ether is apt to cause loss of fluid from vomiting and certainly causes a longer period of fasting than with other forms of anaesthesia, which is particularly serious to a diabetic who is in acidosis and needs food and fluid. It sometimes has to be given in combination with gas oxygen to secure sufficient relaxation for abdominal work.

For all major operations on the lower extremities, our choice has been *spinal anaesthesia.* Almost without exception it has been successful. It does help to prevent shock and if a preliminary injection of morphine and scopolomine is given the patient usually does not mind being conscious during the operation. Should this not suffice, a few breaths of gas will allay his fears.

It is perfectly simple for the surgeon to do the spinal puncture, but it has always seemed safer to use an expert anaesthetist. We occasionally do see severe reactions from spinal anaesthesia and the patient is better treated if the surgeon confines himself to his own province. This applies with equal force to other forms of anaesthesia. A good anaesthetist is an exceedingly valuable insurance.

For all other types of operation, *nitrous oxide oxygen* or ethylene anaesthesia has been used successfully. It is not harmful to the patient and the surgeon is free to do his work if the patient is unconscious. Its success depends largely on a preliminary hypodermic of morphine.

Novocain as a local anaesthetic is of some value. The fear of producing gangrene or infection in an already weakened circulation has kept us from using it in the feet. We have used it in herniotomies and in abdominal work. One breast amputation for carcinoma was done with it in a woman of eighty, very successfully. In a region where the blood supply is good, one need not hesitate in clean cases to use it.

The surgery of the diabetic essentially is the same as that of the non-diabetic. The principles are the same. The risks are greater. In the surgery of necessity, the risk increases hourly with delay. It cannot be too often repeated that sepsis in diabetes is always an emergency. My internes are told that a diabetic patient admitted to the hospital during the night is as much an emergency as an acute appendicitis. But even some of my colleagues whose ability I respect highly are slow to appreciate the danger of delay. How necessary it is to stress the need of prompt intervention. Sepsis lowers the tolerance for sugar. Many mild diabetics are converted permanently into severe cases if not promptly treated. With the drop in tolerance acidosis may appear and coma is hovering in the background. Regardless of any other converted permanently into severe cases if not promptly treated. With the drop in tolerance, acidosis may appear and coma is hovering in the background. Regardless of any other condition, the sepsis must be relieved. It is criminal to attempt to treat the diabetes alone. Insulin will not relieve sepsis. Uncontrolled sepsis is indicated by the necessity of increasing the dosage of insulin.

Frequently in the days before insulin, we have been able to spot unsuspected sepsis by the increase in the severity of the diabetes as shown by the diabetic rather than the clinical chart. Since the use of insulin, the necessity of increasing the dosage tells us the same thing.

The possible benefit of operation should never be denied a patient no matter how sick, unless obviously moribund. In our experience it is not operation that kills them but septicaemia or uremia. Relieved of the septic condition, much may be done. In the presence of sepsis the condition becomes a vicious circle. Inasmuch as the sickest patients are usually seen late, for one's protection, a blood culture should be taken before operating but operation should not await the report.

When confronted with a very sick, infected diabetic with medical consultant not immediately at hand, it is much safer to operate at once. despite the presence of sugar or diacetic acid in the urine. When confronted by such a situation, the surgeon will improve the patient's condition by the administration of 100-150 grams of carbohydrate in the form of orange

juice, subpectoral infusion of saline solution and by giving a suds enema. Insulin is not indicated at this stage. The medical man can take up the treatment after operation.

Carbuncle is one of the most serious complications of diabetes. They occur in patients of all ages, in all locations and vary tremendously in size and virulence.

With one exception immediate and radical operation is indicated. We have always used gas-oxygen anaesthesia. The skin has been shaved and sterilized with ether and iodine. The operation has been that described by Kanavel. A wide crucial incision extending through the zone of induration has been made with the flaps undercut parallel to the skin to their full extent. This allows as complete drainage as if the lesion were excised and saves a great deal of skin which subsequently becomes healthy. The wound is then packed loosely with hot boric acid solution compresses and the wound covered with others which are changed frequently during twenty-four hours. At the end of that period, the packs are removed. By this time oozing has ceased and if the wound is large, it is treated by the Carrel-Dakin method, with Dakin's solution every 2 hrs.; if small, Dichloramine T 2% is sprayed into the wound and but a small amount of dry gauze dressing applied. With this technique, the course has always been satisfactory. It has never in our experience been necessary to enlarge our incisions because adequate drainage was established primarily. We have never changed our technique because to quote from our tennis champion, "one should never change a winning game," and we have never lost one of these patients.

Diabetics do not stand treatment with strong antiseptics. For this reason we use boric acid solution more generally than in other cases. The use of the hypochlorites developed naturally from experience with them in the war when we found that their action was upon necrotic tissues and did not injure healthy tissue. Furthermore they keep granulation sterile and flat, thereby hastening epithelialization, or, if necessary, making skin grafting more successful.

The exception mentioned in the beginning of this paragraph refers to carbuncles of the upper lip. As you know these carry a high mortality because of the incidence of septicemia. In these we are content to make only a small opening. The process of resolution is helped by the use of X-Ray treatment. It also helps to relieve the pain. It is not used more in the other carbuncles because it is so important to the diabetic to promptly get rid of his infection.

Abscesses anywhere must be promptly incised. We have seen numbers of patients verging on coma as the result of small axillary infections. Diabetics seem especially susceptible to infection. Feet infections are the most common but we have seen infections of the scalp, face, hands, trunk, neck, beneath the tongue, ischio-rectal fossa, about the kidney, various infections within the peritoneal cavity, bladder, etc., and of the thigh from insulin injections. Wherever they occur, they must be promptly treated. It may be worth mentioning that gall stones or stones wherever located may be the means of converting a mild diabetic into a severe one because of chronic infection, even though they never form demonstrable pus. The same is true of prostatics with any considerable amount of residual urine.

Infections of the fingers and hands, tremendously important in anyone, in diabetics are doubly so because of the increased danger of septicemia and gangrene.

Lesions of the feet in diabetes almost always occur in patients of middle age or beyond. It is also true that they usually occur in mild diabetics. Whether this is because most diabetics developing the disease late in life are mild or because being mild diabetics they are less careful of themselves, or are more active than those with a severe type I do not know. In almost all of them, in our experience, the course of the process has been influenced by arteriosclerosis. We routinely X-Ray not only the feet but legs as well and there are always evidences of arterial calcification.

Prophylaxis perhaps is out of place in this paper, but the importance of it is tremendous. A daily washing of the feet, softening of the skin by use of lanolin, wearing of woolen socks, proper fitting shoes, cutting of nails straight across to prevent ingrowing nails, avoidance of trauma in the care of corns, exercises to promote circulation and immediate attention to any blister or break in the skin would save many feet.

Infection of the superficial tissues, osteomyelitis and gangrene are met with in all sorts of combinations in lesions of the feet. It is difficult to draw the line between infection and gangrene because all untreated infections will result in gangrene if the patient doesn't die promptly. Strictly speaking there is no such thing as diabetic gangrene. In all forms there is a background of arterio-sclerosis with trauma, sepsis, chemical or thermal agent as the exciting cause. As the patient is a diabetic, it is called diabetic gangrene.

Without retracting anything that has been said about the need for prompt interference in infection, it may also emphatically be stated that there is room for a great deal of conservatism in the treatment of feet. We have a number of patients walking about on their own feet who a few years ago would have had a mid thigh amputation and many more in whom the knee and a leg stump were conserved that formerly would also have lost them.

With the superficial infections and infections in the toes if they remain localized, there is usu-

ally a good prognosis and amputation of the foot is rarely necessary. It may be necessary to amputate a toe. If the deeper structures become involved, the prognosis for the foot is graver. It usually means that there is insufficient blood supply and secondary gangrene will develop.

In some of these cases even if the sepsis could be cured, the function of the foot would not be satisfactory. Many of them develop osteomyelitis by extension. The clinical picture is what one would expect, varying with the virulence of the infection, elevated pulse, leucocytosis, sugar and perhaps diacetic acid and acetone in the urine and an elevated temperature. The amount of rise is sometimes deceptive because most all diabetics run a normal temperature slightly lower than others. The foot is swollen, hot, tender, the infected toe with one or more discharging sinuses running down to bare bone and a particularly dusky fan shaped area of red extending from its base onto the dorsum. There may be a similar area on the plantar surface. One must get rid of the infected bone but if more than the distal third of the metartarsal is involved, the risk is hardly worth taking and amputation of the foot is to be considered.

We do see chronic osteomyelitis, usually in the phalanges with a sinus of long standing started

Mr. C. Age 71.

from an abrasion or perhaps beneath a corn. Usually removal of the sequestrum or amputation of the toe suffices. I have seen one which cured itself by throwing off the sequestrum after several months in a patient who refused treatment.

Primary gangrene is always a result of arteriosclerosis. It is in the beginning not infected but may become so and for this reason it is not always safe to wait for a definite line of demarcation. These patients often have numbness of their feet, alternating with excruciating pain, cyanosis and coldness for a long time before any lesion appears, not infrequently they have small superficial areas of gangrene on the tips of their toes which can be healed. Sooner or later fol-

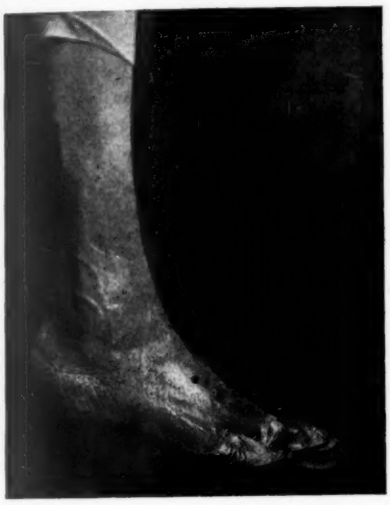
Mr. C. Age 71.

lowing the latter signs they develop a dry gangrene of one or more toes. If there are no signs of infection, there is no need of haste but because infection may develop, the surgeon personally should keep close watch. If the gangrene is limited to the toes, it is fair to sacrifice them alone, leaving them to heal by granulation. It is a gamble but often pays if the patient is willing to risk additional loss of time and money. Absence of a dorsalis pedis pulsation is no contraindication to this. The following history will illustrate.

Mr. C., a patient of Dr. F. G. Brigham, age 68, entered hospital December 18, 1923, T 96 P 80 with dry gangrene of the fourth toe of the right foot. The third toe was cyanotic. There was some redness of dorsum of foot. No dorsalis pedis could be felt. He had signs of arteriosclerosis elsewhere. He had been treated by us for superficial areas of gangrene of several toes some time before and they had healed. His blood sugar was 0.12 and at no time was it higher than 0.14. The third and fourth toes were amputated with the metartarsal heads. There was some slough of the plantar fascia; very little bleeding. The wound was dressed with Di-chloramine T and after a time all necrotic materal had been removed, the wound was clean but would not granulate. At the end of three weeks, there having been no sign of healing, amputation was advised and refused. On February 4, 1924, the fifth toe was ampu-

tated because of gangrene. The wounds had then begun to granulate. They were kept sterile and when the epithelinm started to grow it grew rapidly. He was discharged February 24th and his foot was entirely healed several weeks later. He is now 70 and has been able to go to business ever since with no further trouble.

The co-operation of the patient is essential to success. Mr. A., whose history follows, owes his



Mr. A. Scar of healed superficial gangrene on dorsum of foot. Healed amputation scar and scar of subsequent incision along metatarsal.

foot as much to his own obedience to instructions as to his doctors.

Age 63. Admitted February 3, 1925. Diabetes 16 yrs. (mild) under the care of Dr. E. P. Joslin.

P. H. 1921 Rt. foot treated for a superficial gangrene of dorsum caused by poultice of chloroform liniment in attempt to relieve pain. Treated by Dakin's solution. Healed in a month.

P. I. Was about to start for West Indies and developed a small ulcer on outer side of right little toe. Saw a doctor in another city, who prescribed for him and advised him to continue his trip. Ten days ago the toe became black. When seen there was a sinus in toe extending down to dead bone. The toe was becoming gangrenous. There was an area of redness about its base and a tender spot on the plantar surface of foot just proximal to the head of the metatarsal. The toe was removed and incision along plantar surface revealed sloughing fascia. Dichloramine T dressings supplemented by Alpine Lamp therapy cleaned the wound rapidly. A sequestrum consisting of the metatarsal head was removed and the wound closed promptly. He was discharged April 18 and readmitted May 1 for an infection along shaft of fifth metatarsal, which cleared up promptly. He is healed and attending to his business.

It is important that these patients be put in bed at once to relieve their feet. While in bed, they can be given exercises to improve their circulation and also to help burn up carbohydrate. Being busy helps their morale. If they are not in an organized diabetic clinic, a nurse who knows the disease is a tremendous help.

When it is necessary to sacrifice the foot, there are a number of things to consider. In an extremely sick patient, with a virulent rapidly spreading infection and gangrene, who has only a fighting chance, the mid thigh operation is best. This because of the speed with which it can be done. The prognosis is usually grave. In most other cases leg amputations will suffice. We operate without a tourniquet and this not only spares the tissues trauma but allows us to estimate how good the circulation is. The leg amputation is a little slower but is less shocking. The flaps should be loose; all the tension taken up by the fascia. Following a suggestion of Dr. D. F. Jones, we have not for several years drained a stump. Our trouble with healing has been very slight. In only two instances have we found it necessary to reamputate. The greater ease of learning to walk on an artificial leg makes it worth trying for the leg amputation. Four patients have had both legs amputated below the knee successively and successfully.

SUMMARY

Insulin has greatly decreased the risk of elective operations in diabetic patients.

It has made the medical problem simpler in more urgent surgical cases. It has not done away with the prime surgical requisite of prompt intervention in sepsis.

In spite of this there is room for conservatism and discrimination is needed in the choice of operation.

Dr. Frank H. Lahey, Boston: I have enjoyed Dr. Cochrane's paper very much and I would like to preface any remarks I may make with

Mr. A.

the statement that I do not pose as an expert in the surgery of diabetes. My experience in diabetic surgery has been casual. I have, however, at the Deaconess Hospital, had some of the points which Dr. Cochrane has brought out demonstrated to me very impressively. We have had three cases in which the necessity for immediate drainage was forcibly brought out; one, an alveolar abscess, and another, a cervical

abscess, and another, a drained appendicitis case with inadequate drainage. In all of those three cases coma was imminent, the diabetes uncontrollable and the whole picture changed as soon as adequate drainage was instituted.

I think we should all bear in mind the points Dr. Cochrane has stressed; and one is that infection in diabetes is certainly an emergency.

As to the type of anesthesia—I think ethylene offers an excellent anesthesia, particularly for cases which may be done as elective operations. Certainly our experience with diabetic thyroids—and we have done a great many diabetic thyroids with ethylene—has been most satisfactory provided they have been properly prepared. When an elective operation is done on a diabetic, the diabetic expert should be the one to elect the time of operation.

Another thing is the matter of blood cultures. Dr. Joslin has stressed the necessity of preoperative blood cultures before operations are done on diabetics in order that the responsibility for septemia may not be attached to the operator and also for the matter of prognosis.

The other point for which we owe Dr. Joslin a great deal is this question of the care of the extremities. He has impressed on these patients the danger of an ingrowing toenail, and of cutting a corn too deeply, and that a tight fitting shoe may be the cause of the loss of the extremity, and he has impressed upon them the necessity of proper care of the feet and of the toenails and the necessity of wearing properly fitting shoes; and these are very important points.

Dr. R. H. Miller, Boston: I too do not pose as an expert in the surgery of diabetes and I am so heartily in accord with what Dr. Cochrane has said that there is very little I can add. I have been struck by the markedly ill effects which can take place in a diabetic from a small focus of infection. It is surprising to think that a tiny furuncle can give rise to the disturbance that it does; and a small focus should be treated with as much care as a large one.

Another point is that it is only recently that we have approached surgery in diabetes with very much ease of mind and even in the recent past a patient with some abdominal lesion has been passed up as a surgical case because of the presence of sugar in the urine or blood. I believe that the time has come now when in the presence of a chronic infection in the abdomen or pelvis or genitourinary tract, if the patient isn't a terrifically bad risk, we should operate on him even if he has diabetes with the hope of ameliorating it, rather than withhold operation for the reason that he has diabetes. Operation offers a definite hope of improving the diabetes.

Dr. R. C. Cochrane, Boston (closing): I have nothing to add except possibly to reiterate the point that was brought out that in elective surgery the medical consultant is the one to determine the time of operation but in an emergency the surgeon should operate and then send for medical help.

THE NEW PALMER MEMORIAL

Last year recorded enormous gifts to scientific institutions, several being for the advancement of medicine. Although several of the greatest endowments were not for medical education or hospitals, the fund of six million dollars given to Vanderbilt University in Tennessee primarily for the development of its medical department demonstrates a practical interest in the ills of mankind.

We are fortunate in having here in Massachusetts two unnamed contributors to the humane purpose of relieving the ills of those who are confronted with the mental and physical pangs of long continued disease. Although small in comparison with the millions of other contributions, the timely recognition of a need hitherto imperfectly met makes these gifts of major importance.

Not only physicians, but in greater measure, the sufferers with chronic diseases will appreciate the resources which are to be applied to the problems so long burdensome to society and those directly involved. For many years sufferers with incurable diseases have in many instances found great difficulty in finding the merest essentials for the care required. A few institutions, among them the Palmer Memorial, have tried to succor those who were not suitable for admission to the well equipped hospitals designed for acute or possibly curable cases. Not a few of these unfortunates have found themselves reduced to friendly but relatively poor care among relatives, and others have existed for varying periods in public institutions. A few gain access to local hospitals where in too many instances no attempt has been made to do more than provide relief of distressing symptoms.

The suffering of the chronic invalid has been so appealing that many persons have come to feel that humanity demands some more effective ways with respect to meeting the needs of these sufferers. For five years the officers of the New England Deaconess Association have been studying the situation and are now about to put the result of their deliberations into action.

The Palmer Memorial with its few beds was the demonstration of the crying need and now the work will be carried on in a larger way in

the new building to be erected on The Riverway at Pilgrim Road, made possible by the gifts referred to above.

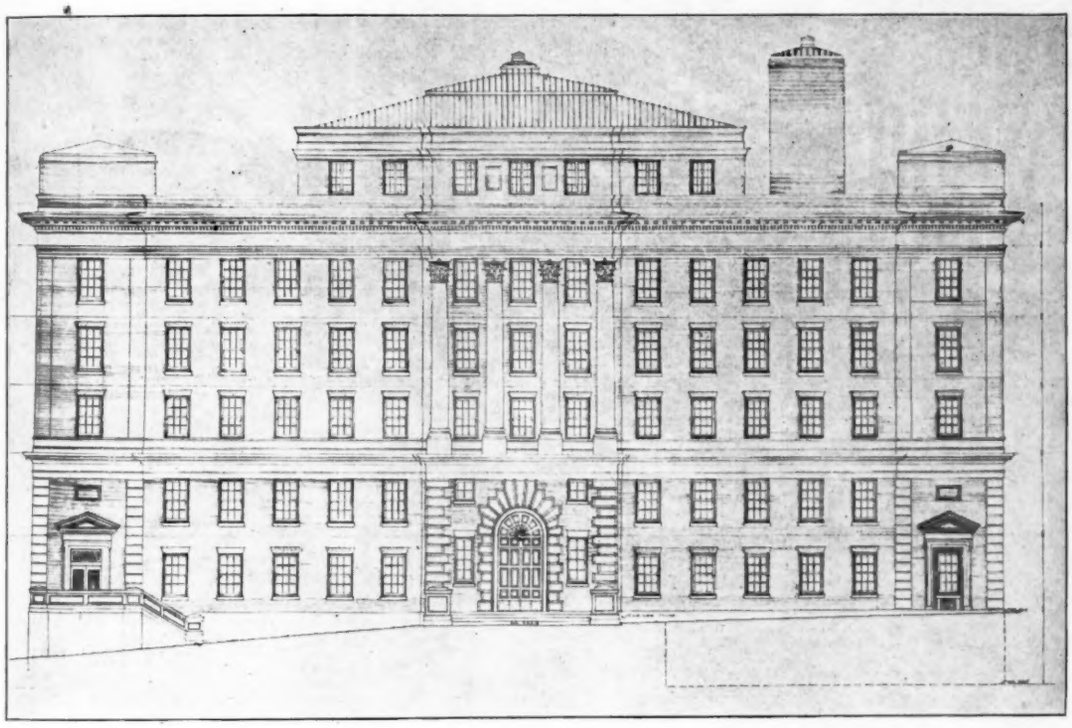
This new building will be an addition to the great group of hospitals and teaching institutions now existing and will perhaps be the leading institution devoted to the study of chronic diseases.

This study will stimulate constructive efforts designed at least to relieve where it may not be able to cure chronic disease. A particular feature will be the education of the patient along the lines of intelligent care in order to promote comfort and, when possible, useful activities.

The beds of this institution will not necessarily be the places of last resort but rather the school-room in which the patient will learn to so care for himself that he will find some enjoyment in life and be less of a burden on his friends and society. The treatment of diabetes illustrates one great advance along these lines and it may be that even cancer may react to the better knowledge which it is expected exists across the threshold of an opening door.

Dr. Elliott P. Joslin will be the head of the medical service, **Dr. Daniel Fiske Jones** will be Chief of the Surgical Department, and Dr. Shields Warren will be the pathologist who has been spoken of by Dr. Joslin as "the pathologist to the living" for he will be the counselor of the physician and surgeon in the problems presented by the patients.

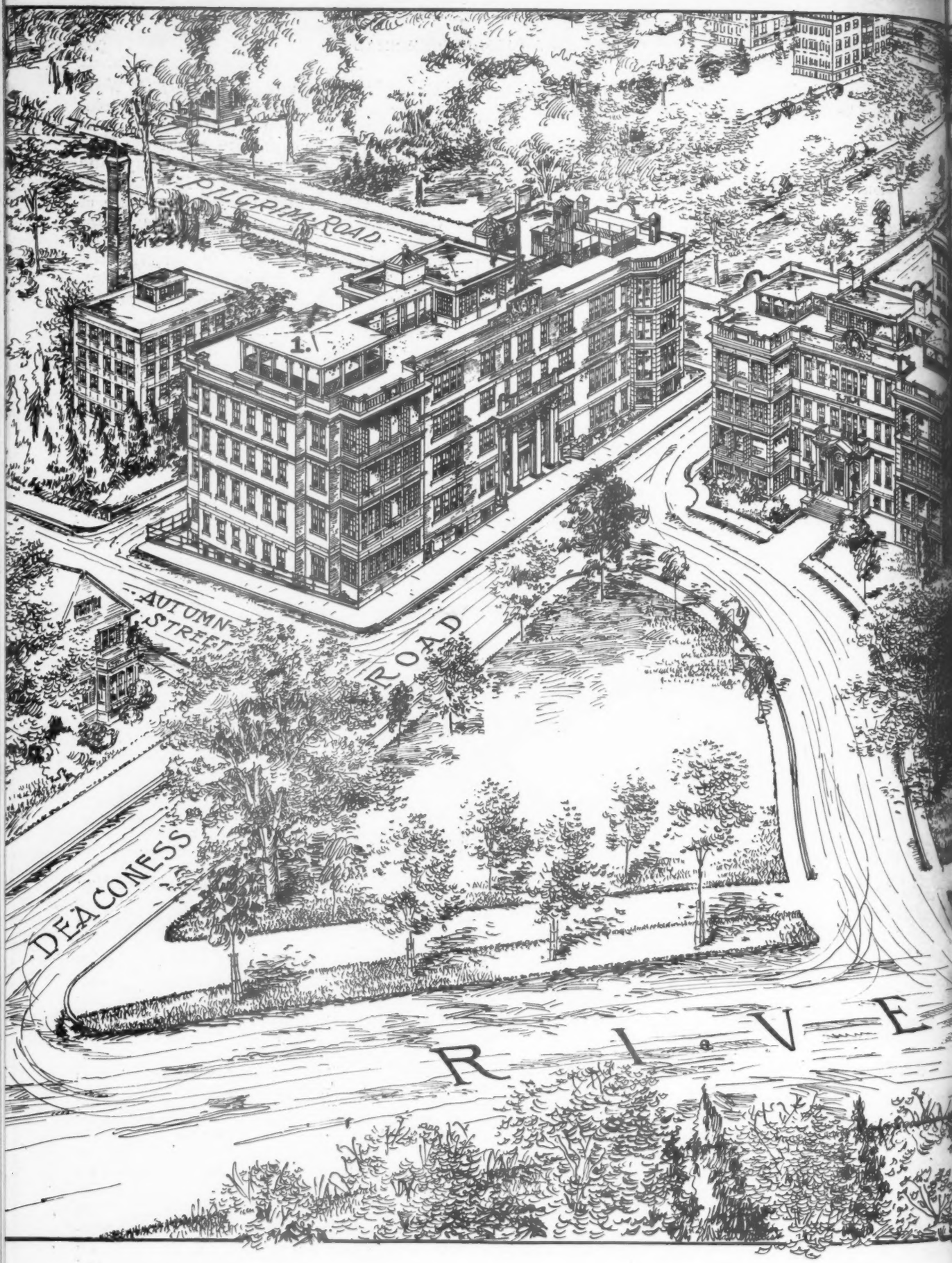
The plans for this hospital represent in a general way the advice of Dr. Rufus Cole of Rockefeller Institute and Dr. Francis O. Wood of the Cancer Commission of New York. Great help has been received in a detailed way from Dr. Robert B. Greenough, director of the Cancer Commission of Harvard University and surgeon of Huntington Memorial Hospital, and Miss Coleman, superintendent of the House of the Good Samaritan. Many other physicians who have worked in chronic hospitals and especially at the Collis P. Huntington Memorial Hospital have given abundantly of their time. These opinions have been assembled and revised by the architects of the Deaconess Association until the design is complete.



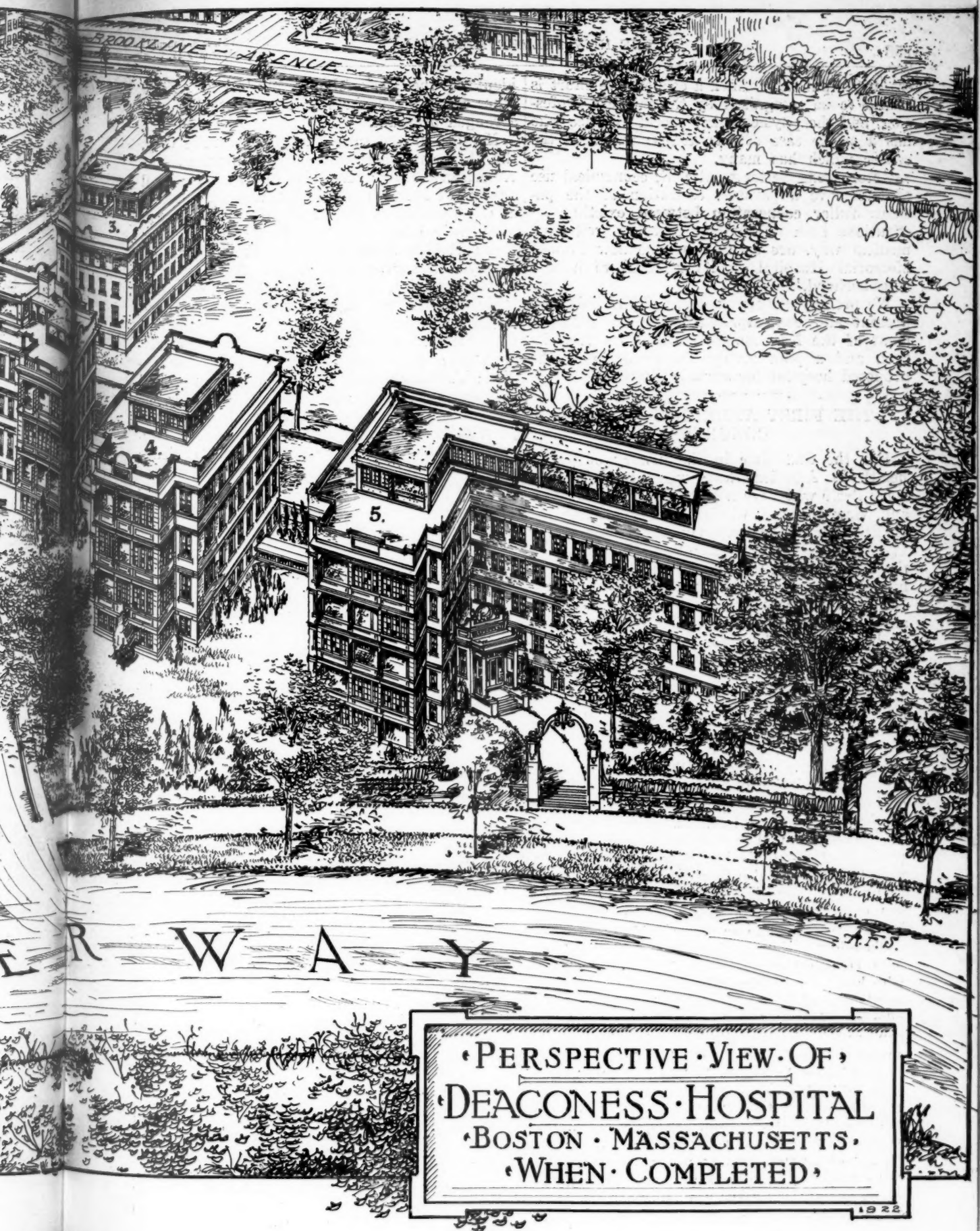
Elevation on Pilgrim Road

Dr. Joslin puts the expectations of those in charge in these words:

"A better coöperation between existing institutions will allow a more effectiye distribution of patients. One hospital can treat this disease best, another that. The education of the patient too is a part of this plan of treatment. You cannot educate a man in the quick course of pneumonia, but in slower diseases such as diabetes the life of the patient, young or old, depends on education. In chronic disease education is vital. Diagnosis is all important in a chronic disease, because the patient lives to think and wonder. Coöperation will lessen expensive diagnosis. Better coöperation will lessen the cost of X-ray, radium, and maintenance of a labortory. But coöperation will do still more. It will stimulate an exchange of ideas between superintendents and hospital staffs. It will promote renewed inter-



1.—Present Deaconess Hospital. 2.—Proposed New Administration and Patients' Building. 3.—Nurs Home.
Units 3 and 5 Are Those on Whic immediat



PERSPECTIVE VIEW OF DEACONESS HOSPITAL BOSTON MASSACHUSETTS WHEN COMPLETED

1922

3.—Nurses' Home. 4.—Contemplated Private Patients' Building. 5.—Proposed Palmer Memorial Hospital.
on Which Immediate Work Will Begin

est in the patients. Such a coöperative effort is bound to be recognized by the medical profession, and the physician in general practice who has a single case of one disease will seek the center which has many.

"More beds, better treatment, economical use of expensive apparatus, education of the patient, fuller coöperation between existing institutions both in administrative as well as a medical way, are assured by the new Palmer Memorial Hospital in its removal to a new neighborhood."

We present the arrangement of the buildings present and contemplated under the management of the New England Deaconess Association, and a plan giving the elevation of the proposed hospital for chronic diseases.

THE FIRST AMERICAN HEALTH CONGRESS

For the first time in the history of public health in America those who are doing the work itself will have a chance to meet together and view it as a whole when the American Health Congress convenes in Atlantic City, May 17-22. This Congress has been the dream of the National Health Council, 370 Seventh Avenue, New York City, since its formation in 1921 and will reveal the vast strides in coördination of effort and coöperation that the Council has brought about for its member organization during the last five years.

Included in the membership and on the staffs of these participating organizations are the leading authorities of the country in every phase of public health—tuberculosis and cancer control, prevention of blindness, social and mental hygiene, public health nursing, the control of preventable diseases, the study and care of heart disease, and positive health education for both children and adults. This means that the programs will not only show the accomplishments of public health workers up to the present, but will also forecast the plans for the future. It is possible that a public health program for a decade may result from the meeting of specialists in so many fields.

To address the opening session of the American Health Congress, Sir Arthur Newsholme, who has been highly influential in the development of public health work in England and who also has a close knowledge of the American public health situation, is visiting this country. Professor C. E. A. Winslow, President of the American Public Health Association, will address one of the general sessions of the Congress. "Is Public Health Improving the Race" is the piquant title of the address to be delivered by Dr. Ray Lyman Wilbur, President of Stanford University. It is especially fortunate that this American Health Congress will hear of the international phases of health work from Dr. George E. Vincent, President of the Rockefeller Foundation. Many other renowed speakers will complete the well arranged program.

Meeting at the same time, in Atlantic City, the three national nursing organizations—the American Nurses Association, the National League of Nursing Education, and the National Organization of Public Health Nursing, will hold their biennial convention; the American Child Health Association and the Conference of State and Provincial Health Authorities of North America, will gather at this time for their annual meetings. The member organizations taking part are: American Child Health Association; American Heart Association; American Public Health Association; American Red Cross; American Social Hygiene Association; American Society for the Control of Cancer; Conference of State and Provincial Health Authorities of North America; National Committee for Mental Hygiene; National Committee for the Prevention of Blindness; National Organization for Public Health Nursing; National Tuberculosis Association; United States Children's Bureau; United States Public Health Service; Women's Foundation for Health. This means that the field of public health is completely covered in the general and special sessions. It is of special interest that the General Federation of Women's Clubs will hold its meetings immediately following the American Health Congress.

Exhibit space has already been taken by commercial and non-commercial groups, forming one of the most educational health displays that this country has ever seen.

Special railroad rates from all parts of the country have been secured and already the assurance is that there will be at least 7,000 in attendance.

EXCERPTS FROM THE DECEMBER, 1925-JANUARY, 1926, BULLETIN OF THE NATIONAL BOARD OF MEDICAL EXAMINERS

1925 Is Biggest Year In History Of N. B. M. E.

The calendar year of 1925 saw more candidates examined by the National Board than any previous year of its existence. This applies not only to the grand total, but also to the total number examined in each of the three parts of the examination.

Examinations In June, 1926

The June examination in Parts I and II will be held on the 21st, 22d, and 23d in all Class A medical schools where there are a sufficient number of candidates who desire to take them. Where there is more than one medical school in a city, however, the examination will be held at only one school in that city.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY
RICHARD C. CABOT, M.D., AND HUGH CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 12061

MEDICAL DEPARTMENT

A married New England woman forty-four years old was sent to the Consultation Clinic September 29 for study of difficulty in swallowing. She was considered a neurotic woman of the chronic invalid type. She gave a vague history.

Her father and mother had heart trouble in late life and died of shock. Two sisters had high blood pressure. She had two daughters living and well.

She had scarlet fever and earaches in childhood. She had never been robust, had always been very nervous and had all sorts of pains and aches. She had always had leucorrhea. Her bowels had always been constipated. She slept poorly. She had had painful hemorrhoids at times. Her catamenia were usually irregular, with dysmenorrhea and excessive flowing. Since the birth of her first child, now twenty-three years old, she had never been really well. For years after the birth of her children she had pelvic trouble with foul vaginal discharge, less in later years. She had throbbing backaches. For years her legs, abdomen, face and hands were swollen at times, especially when she had been working hard. Her right leg sometimes required an elastic stocking. She was once told her blood pressure was a little high. She had had dyspnea, now very marked. For years she had had indigestion and had dieted, eating no meat or starch food. Some years before admission she was rather subject to tonsillitis. For six months she was in bed with a series of illnesses, including quinsy sore throat. At thirty-seven she had influenza during an epidemic. She used to faint easily. She passed the menopause three years before admission.

A year before admission she began to notice an uncomfortable feeling in the lower end of the sternum, "as if there were something there that ought not to be." This was most noticeable when she swallowed food. It became steadily worse until she entered a hospital for study ten months before admission. The diagnosis was "trouble with the nerves of the stomach." The discomfort on swallowing became so bad that she stopped taking solid food, and since that time had lived on milk, soups, and gruel. Soon after her return from the hospital she "caught cold" which seemed to settle in the spot under her sternum, causing severe pain, worse on swallowing. This had persisted with one remission for four days, though during the past few months it had in general become less. She remained in bed for three months. Since that time she had been up in a chair. Sometimes she had a feeling of "puckering" or constriction across the middle of the chest, less severe now than nine months earlier. Three months before admission she had choking sensations in the throat and about the level of the thyroid cartilage. At first it was a tickling sensation, now choking, whenever she took food. Buttermilk and coffee rarely troubled her; sometimes tea and chicken broth did. Cold water choked her more than anything else. With the onset of the sensation she had white sputum. A throat specialist could find nothing. She had eaten less than before, though at times she was very hungry. She tired of liquids. She took perhaps two quarts of milk and some chicken broth daily. She never vomited. Her usual constipation was much worse. At the beginning of the illness she thought she weighed about 170, as usual. She now weighed 106. Nine months before admission she was even thinner. Part of the loss she thought due to loss of edema, which she had not had during the illness. She was weak and at times had palpitation as well as dyspnea on exertion.

Examination showed an emaciated, worn looking woman with pale skin and mucous membranes. The teeth were false. The apex impulse of the heart is not recorded. The left border of dullness was 9.5 cm. from midsternum, 2 cm. outside the midclavicular line. The right border of dullness was 2 cm., the supracardiac dullness 4 cm. There was a soft systolic murmur at the third left interspace. The sounds and action were normal. The blood pressure was 120/80. The lungs were negative. The abdomen showed slight generalized tenderness, voluntary spasm, fecal masses. There was epigastric pain on deep inspiration. Pelvic examination showed leucorrhea. Rectal examination showed external hemorrhoids. The feet and ankles showed slight pitting edema.

The temperature was 99.4° (by mouth) to 94.9° (rectal) the day of death. The pulse was 110 to 70. The respirations were 17 to 29. The urine was slightly cloudy at one of two examinations, specific gravity 1.008 to 1.010, a very slight trace of albumin once, many leucocytes at both, 2-4 red blood cells per high power field at one, amount normal when recorded. The blood showed 9,300 to 19,500 leucocytes, 69 per cent. polynuclears, hemoglobin 45 per cent., reds 2,700,000 to 2,800,000, with moderate achromia, some variation in size and shape, and an occasional diffuse basophilic cell. The platelets ap-

peared to be much increased. A Wassermann was negative. Three stool examinations showed a very strongly positive guaiac; no macroscopic blood.

The day after admission a nodular irregular mass descended in the right flank on deep inspiration, possibly liver or kidney. It was thought there was a large neurotic element in the case.

At X-ray examination October 4 the liquid barium was obstructed near the junction of the middle and lower thirds of the esophagus. Below these points the shadow was very irregular. A small amount passed through into the stomach soon after swallowing. The outline of the trachea and the greater part of the right descending bronchus and part of the left bronchus became outlined with barium. (See Plate I.) No definite connection between the esophagus and the trachea could be made out. A second examination the following day confirmed the previous observations. In addition, when the patient was examined in a standing position the right diaphragm was considerably elevated and

PLATE I. The liquid barium is obstructed near the junction of the middle and lower thirds of the esophagus. Below these points the shadow is very irregular. A small amount passed through into the stomach soon after swallowing. The outline of the trachea, the greater part of the right descending bronchus and part of the left bronchus are outlined with barium. No definite connection between the esophagus and the trachea could be made out. The right diaphragm is considerably elevated and there is free space between the diaphragm and the upper surface of the liver.

there was free space between the diaphragm and the upper surface of the liver. This was thought probably due to air in the peritoneal cavity, as seemed to run in a fine stream in the upper part of the stomach, suggesting a possible lesion there. In addition there were numerous fine specks of

PLATE II. Shows numerous fine specks of barium scattered over the abdominal field, possibly barium free in the peritoneal cavity.

a view taken with the patient lying on her side showed the air rising to the highest point. Owing to her difficulty in swallowing only a small amount of the barium was in the stomach. This barium scattered over the abdominal field, possibly barium free in the peritoneal cavity. (See Plate II.)

October 7 the patient complained of general-

ized abdominal pain, moderately severe. The abdomen was soft. There was slight generalized tenderness, as at admission. She had been having nothing by mouth. She was given rectal taps of glucose.

October 8 X-ray still showed a large amount of barium scattered through the colon. Examination of the urinary tract was unsatisfactory. The plate however showed a large amount of air, probably free in the abdominal cavity, and a very much dilated colon.

The night of October 8 she was a little more uncomfortable. The following morning she vomited several ounces of brownish fluid. The abdomen was still soft. The temperature was subnormal. She was given 2000 c.c. of glucose subpectorally. The left lower back was dull to percussion, and three days later showed many coarse moist râles. She grew rapidly weaker. There were also râles in the right lower back and a slight rise in respiration. The blood pressure fell to 85/62. She went into coma.

October 14 X-ray of the chest showed distinct mottling extending from the hilus to both lower lung fields, most marked on the right. The heart shadow appeared to be displaced somewhat to the right, as was also the trachea. The diaphragm could be faintly seen on the right and was rather indefinite on the left, probably because of motion.

The temperature fell steadily. October 16 she died.

Discussion

BY RICHARD C. CABOT, M.D.

NOTES ON THE HISTORY

People coming to a doctor for difficulty in swallowing are rather few. It is a clean-cut symptom with rather few causes. Of course at forty-four one is nearing or at the cancer age. The commonest cause of difficulty in swallowing, if it really means that and is not a mistake for something else, is cancer of the esophagus. In a younger person we should be considering some caustic stricture due to acid or alkali, and then the lesions that have been called cardiospasm, pretty well recognized now not to be cardiospasm but organic lesions there. These are the three things that always come to our minds.

Eating no meat or starchy food leaves very little to eat. She must have lived on butter. But of course with all the sugars left one can get on well enough.

This early history apparently all boils down to dyspnea. There is nothing else there that I can carry forward in any particular way to the later parts of this history. She has all sorts of symptoms pointing to no particular disease.

We know what to think of the hospital which gave the diagnosis of "trouble with the nerves of the stomach." But I take it they did not find organic disease. That is about all we can say of that.

The choking sensations three months ago were much higher up than she had had before.

I cannot understand the distinction here between the effects of tea and of coffee. We can see how cold water might easily bring on spasm on top of any organic lesion that might exist.

In the end we have the two sets of symptoms, those that apparently call attention to the heart —edema, palpitation, dyspnea—and those pointing to the esophagus, first to its lower part and then to its upper part,—dysphagia. Aneurysm, which I did not mention in the common causes of dysphagia, is a rare cause, and with the occurrence of cardiovascular symptoms naturally comes into our minds. It is one of the things to watch for in the physical examination, which we now go on to read.

NOTES ON THE PHYSICAL EXAMINATION

There is nothing to put the finger on in the examination of the chest.

We remember that she has had a lot of trouble with constipation. So far we are just as wise as we were before,—that is, we do not know anything.

This temperature was on the day of death. One cannot have a temperature as low as that for any length of time and live.

There are only two examinations of urine, so we do not regard these records as showing a fixation of gravity. I should say we have nothing here to call any special attention to the kidneys.

The blood shows about the first definite "out" in the physical examination. We have a marked, probably secondary, anemia.

Of course the history is all written in the direction suggested by the neurotic element, and the people who wrote that did not know that there was going to be a necropsy pretty soon. We are much more apt to put down statements about neurotic tendencies when we do not know people are going to die.

Dr. Holmes, will you discuss the X-ray plates?

Dr. Holmes: This (Plate I) is one of the first plates taken, an antero-posterior view of the chest. The interesting thing about it is the outline of the trachea and part of the bronchial tree. It probably was not due to iodol. There is nothing of that kind here. It is evident that in swallowing the barium part of it went down the trachea, or else we have a fistula between the esophagus and the trachea. In some way the barium which she was supposed to drink has gone into the trachea.

Dr. Cabot: Is that a common thing?

Dr. Holmes: No.

Dr. Cabot: Is it good for the lungs?

Dr. Holmes: No. But it doesn't seem to do much harm. The first time I saw it I got a bad fright.

DR. CABOT: But you got used to it?

DR. HOLMES: Yes. The barium is seen here very high in the neck. If that came from a fistula the fistula would have to be above the entrance to the thorax, and we do not have fistulas in that region. When we get a fistula between the esophagus and the trachea it is usually near the bifurcation. It is usually due either to a cancerous invasion or to tuberculosis of the glands with involvement of the trachea. It is more likely that there was some paralysis of the swallowing organs and that she was not able to close the glottis and the thing went over into the trachea. That does happen sometimes with obstruction of the esophagus lower down.

Here is a lateral view of the chest which shows better the same thing. Here we see the barium passing down the esophagus and entering the bronchi on either side. There is a shadow of the barium in the esophagus itself, and it is obstructed at this point. We can see the fine outline. It is much more difficult to get this on a plate than it is to observe it with the fluoroscope.

DR. CABOT: Why is there a break between this shadow and that? Isn't this esophagus?

DR. HOLMES: No, it is trachea. This is the level of the barium in the esophagus.

DR. CABOT: I have not got used to seeing barium in the trachea.

DR. HOLMES: The obstruction is at about this point. A person with this kind of obstruction of the esophagus is not able to retain the barium mixture in the esophagus for any length of time. The first thing he does is to vomit. So it is very difficult to get a good picture of it. But it is fairly easy to see it with the fluoroscope. We notice that the lower end of the shadow is rather ragged. Instead of coming off smooth and forming a sharply marked outline it has a ragged, moth-eaten edge. We see this more frequently with malignancy than we do in benign strictures.

The third plate shows the abdomen after the barium meal. I cannot see anything here that I would want to say definitely is the stomach. The diaphragm on the right side is rather high, and between the diaphragm and this mass is a bright area. This is above the shadow of the liver. We do not normally have gas between the liver and the diaphragm. We do have it if we have free gas in the belly. The first things we look for is the loss of liver dullness, and if I am correct that this is the right side, we have a collection of gas between the liver and the diaphragm. The intestinal shadows are prominent. They are distended with gas.

The next plate (Plate II) also gives that suggestion of a large amount of gas in the intestine, probably in the large intestine. Here we see a part of the large intestine with a considerable amount of barium in it, but the large intestine is tremendously dilated and filled with gas. Here are shadows which look like barium scattered in small masses throughout the field. Such an appearance has been seen where barium has got through into the abdominal cavity. It might be that, or it might be masses in a paralyzed small bowel. This is not the picture that we see in the normal small bowel. Normally the small bowel shows as very fine flakes, here as dense masses. But if the small bowel were paralyzed and dilated from any cause it might show like that.

DR. RICHARDSON: If the wall was very thin would the barium show through as if it might be on the outside?

DR. HOLMES: I presume it might. But it is the shape of the barium that gives the indication. This is not the shape it takes normally either in the small or the large intestine. But it might roll up into balls like this if it were in the abdominal cavity.

This plate was taken on October 14. The other plates were earlier than that. There is evidence of increased density in the lower part of both chests. The outline of the heart is rather indistinct. That looks like a beginning pneumonic process or passive congestion in both lungs, and the heart shadow is a little large, as though there might be some dilatation of the heart.

DR. CABOT: That was two days before death.

DR. HOLMES: I hope the barium in the lungs did not cause that. Then we have pretty definite evidence of obstruction of the esophagus just below the mid-portion. The obstruction has an annular and irregular appearance which looks like carcinoma. There is certainly obstruction there and probably carcinoma. In addition we have evidence of interference with the mechanism of swallowing, so that the food regurgitated into the respiratory tract. Then in the abdomen we have a very much dilated colon, possibly a perforation, with free gas between the liver and the diaphragm, and a paralysis of the small bowel.

Extensive malignant disease might account for the whole picture, that is, with metastases in the abdomen.

DR. CABOT: The meal that the patient takes in a case like this is the ordinary gastro-intestinal meal, and that does not consist merely of barium but is mixed with flour, gruel and so on. Is that necessarily sterile?

DR. HOLMES: No.

DR. CABOT: So that the substances going into the lungs would not necesarily be sterile?

DR. HOLMES: No.

DR. CABOT: Usually one views with some alarm such an event. We do not like to think of substances not sterile going into the lungs.

DR. HOLMES: May I say that of course this woman has probably been doing the same thing with food for years, and of course we gave her food no worse than she had been taking.

DR. CABOT: So that you have not brought

any greater danger to her than she has brought to herself three times a day. That is very enlightening.

I did not suspect anything more than the obstruction at the bottom. But probable cancer is all that I have been thinking of. We certainly have evidence of a great deal more.

"Moderately severe pain" is certainly a very mild statement of things considering what we suspect.

What can you say as to the presence of barium in the intestines four days after the meal?

DR. HOLMES: I do not know that that would be particularly abnormal. We find it in normal people. I have seen it a week later, particularly with a dilated ptotic bowel such as she has.

DR. CABOT: So that is of no especial importance. I am glad to get that fact.

This is the most extraordinary patient, if it is all so,—in the way she has things running into her lungs or abdominal cavity. We do not know anything about the urinary tract. Perhaps we shall find some air there before we get through.

DIFFERENTIAL DIAGNOSIS

This is quite unlike any case that I have ever read about before. I suppose it is safe to say that she has a cancer at the root of the esophagus. Let us start from that point and see what more we can assume. Metastases in the mediastinum might, I suppose, upset the swallowing function enough to send barium into the lungs. You thought there was not a fistula, didn't you?

DR. HOLMES: Yes. I thought the barium was seen too high in the tract to come from a fistula, and I have seen in other cases with obstruction that same phenomenon.

DR. CABOT: What are we to say below the diaphragm? Until we saw the X-rays I was going to say nothing at all. Now I suppose the most probable thing is some perforating lesion of an abdominal viscus. It is simpler, I think, to consider the same lesion that we have been dealing with, cancer of the esophagus below the diaphragm or at the entrance of the stomach. I suppose that there may be a hole there, and gas has gone into the peritoneal cavity and gone round the liver, and a little barium has escaped along with the gas. One has then a good chance for general peritonitis, and I should suppose there would be general peritonitis here.

DR. RICHARDSON: If there was a perforation and air in the cavity it would seem almost impossible to have a soft wall.

DR. CABOT: Yes, it would,—all that. We have been commenting on that discrepancy between the lack of great complaints or great physical signs and the revelations of Dr. Holmes.

DR. HOLMES: It is possible of course that the gas that I see is all inside the gut. I would not want to make a definite statement that it is outside. It is usually. But sometimes a coil of gut will get up behind the liver. And of course a good deal of that is in the bowel, because we can see the outline of the bowel all around it.

DR. CABOT: We must bear in mind then that the things we see are not all as they seem. We have to assume that the lungs are distinctly inconvenienced by the entrance of food and barium, and gradually and in the course of time are showing their displeasure by pneumonia. I take it she had pneumonia as one of the causes of death. It is unusual that she should have died with a subnormal temperature, but that does not exclude pneumonia. I think she had cancer of the esophagus. I think it probably has metastases in the upper mediastinum such as resulted in her swallowing things the wrong way, and so getting a pneumonia of which she died.

Whether there is general peritonitis or not I do not know, but I conjecture that there is. Admitting that all of the facts we have here can be explained by gas and barium inside the bowel, it still seems to me a little more likely that they are outside.

A PHYSICIAN: Why doesn't the pouring of all this gruel into her lungs cause cough or something more than the difficulty of swallowing?

DR. HOLMES: It does.

DR. CABOT: Is there any evidence of that happening in this case? Wouldn't that be mentioned in the history?

DR. HOLMES: I don't think it would. That would be a natural reflex. We would assume that. They don't cough it all up, but they have to cough several times, and it takes quite a while.

A PHYSICIAN: How about the palpitation and dyspnea?

DR. CABOT: I do not seem to have said anything about that, or about the edema of the legs. I do not see that our physical examination gave evidence of any heart disease or renal disease. She should have had an arrhythmia or a murmur or something more than we have before we can say heart disease. We are tempted to say so from the dyspnea, palpitation and edema. But of course she has something in the way of metastases in the mediastinum that may account for dyspnea, and she m have varicose veins or something to account for the edema, although we have no evidence.

A PHYSICIAN: Should we get this dyspnea if she had aneurysm?

DR. CABOT: Yes. It can give dyspnea through pressure.

A PHYSICIAN: What is the significance of her blood pressure going down so low?

DR. CABOT: I think it is due to the same causes as the temperature going so low. I think the body was distinctly uncomfortable

from the introduction of the barium here and there. It is well known that patients often have low temperatures with neoplasm. We can see in the chart how low it did go and how it stayed down there. But I am willing to affirm that she did not have any important lesion in her heart.

A PHYSICIAN: Did she have any nephritis?

DR. CABOT: I don't think she had. It is possible. She had those two low specific gravities, but that is all the evidence. A person taking liquids and no solid food would naturally pass a pretty dilute urine.

A PHYSICIAN: Would gas stay in the peritoneal cavity very long?

DR. HOLMES: It depends of course on the kind of gas. Air usually stays about two or three days. Oxygen will disappear in an hour or two. This was probably air, and we should expect it to stay for a day or two. I think it would also depend somewhat on the condition of the abdominal cavity.

DR. CABOT: Of course if there was a hole I don't see why we should not have a continuous supply.

A PHYSICIAN: How much heavier is the barium used in the meal than the food she would get in life?

DR. HOLMES: It is certainly heavier. I cannot tell you how much. But I don't think that that would make any difference when she swallowed about its going down the trachea. They are just as likely to take the lightest things in there if the glottis does not close.

It really does not do any particular damage to put things down the trachea. The first case I saw came through a fistula. I thought of course he was going to die, rushed him to the ward and had him put on the danger-list. Nothing happened, and since then I have seen a number of cases. Of course we are doing it now right along with lipiodol as a routine procedure.

DR. CABOT: That is supposed to be sterile.

DR. HOLMES: I don't think it is especially. It is germicidal. But the respiratory tract is not sterile. It is really surprising how much one can put into the respiratory tract and not cause any particular harm.

DR. CABOT: And after a tonsillectomy operation it is astonishing how little will cause pulmonary abscess.

DR. HOLMES: If the patient gets a foreign body into the bronchus and we let it remain plugged then we get into trouble.

DR. CABOT: What would you say about a person who comes near drowning? Don't you think water is likely to bother his lungs?

DR. HOLMES: I know it does. I don't think it is particularly due to the water in his lungs; it is due to its staying there.

DR. CABOT: That is, in most cases you are thinking of it has gone in there and come out quickly.

DR. HOLMES: I think it is due to the plugging of the bronchus. If it stays they will have a septic process beyond the plug in a very short time.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Carcinoma of the esophagus.
Bronchopneumonia.

DR. RICHARD C. CABOT'S DIAGNOSIS

Carcinoma of the esophagus with metastases.
Pneumonia.
General peritonitis?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

   Carcinoma of the esophagus with metastases in the liver and various glands.

2. *Secondary or terminal lesions*

   Anemia.
   Purulent bronchitis.
   Bronchopneumonia, lower lobes of lungs.
   Hydrothorax.
   Localized dilatation of the colon.

3. *Historical landmarks*

   Arteriosclerosis.

DR. RICHARDSON: She was a poorly nourished white woman with pale skin and mucous membranes. The abdomen was not distended; the wall was soft. I asked that previous question about distension, Dr. Cabot, because I was interested to see that clinically they could not find a distended abdomen and anatomically I did not, and yet she had quite a localized dilatation of the colon.

There were thin pale muscles. The peritoneal cavity contained 200 c.c. of thin pale clear fluid.

The upper two-thirds of the esophagus, down to a point four centimenters below the bifurcation of the trachea, was dilated, and although dilated the walls were a little thickened, the mucosa in that portion smooth and negative. The lower third of the tube, however, from the point mentioned to the region of the upper end of the stomach, showed much thickening of the wall, up to one centimeter. The cross section surfaces showed grayish homogeneous new-growth-like tissue, and the mucosal side of the tube a diffuse ulceration extending nearly through the wall in places but with no definite perforation; carcinoma. At the esophageal end of the stomach there were a few plaques of new growth tissue in the wall of the stomach, apparently an invasion of the growth from the lower end of the esophagus. The process in the esophagus obstructed the tube to a marked extent. In the region where the esophagus passed through the diaphragm there was a pale brown-

ish, necrosis-like area extending a little below the diaphragm and above it, but I could make out no definite perforation in that region. There was a question whether the esophagus had perforated at that point. If it had it might very well have let air into the peritoneal cavity.

Along the trachea there was an enlarged gland showing new growth tissue. There were some metastatic glands down along the esophagus. The stomach was dilated and contained much dirty opaque brownish fluid. The mucosa was flat but otherwise negative. The pylorus was negative.

The small intestine was slightly distended and contained considerable opaque brown fluid material, but the mucosa was frankly negative. The cecum, the ascending and transverse colon contained much soft brownish pasty fecal material. Otherwise that portion of the large intestine was negative. But between the lower half of the descending colon and the junction of the sigmoid and rectum the colon was greatly distended, forming a cylindrical mass 35 cm. long by 20 cm. in circumference. The wall of the colon in this region was very thin and the mucosa flat, but the wall was everywhere intact. This cylinder of colon presented in the median line anteriorly and extended practically from the pubes to the ensiform. In the distended portion of the colon there was much air and brownish pasty fecal material. Two of the retroperitoneal glands in the region of the head of the pancreas were invaded by new growth tissue.

The liver was a little above the costal border. The diaphragm on the right was at the third interspace, on the left at the fourth rib.

On the right side the pleural cavity contained 200 c.c. of thin pale fluid, on the left 750 c.c.—a hydrothorax principally on the left. On the right there were no pleural adhesions; on the left none except that the right tip of the lower lobe was bound down along the region of the wall of the esophagus.

The thyroid was negative, and no thymic tissue was made out.

The trachea and bronchi showed a moderate amount of mucopurulent material—a slight bronchitis.—and in the lower lobes of the lungs on each side there were a few areas of bronchopneumonia.

The heart weighed 275 grams—rather large for her—but the valves, cavities and myocardium were frankly negative. The coronaries were free, but showed considerable fibrous sclerosis scattered along their walls. Aorta; the ascending thoracic and arch showed a slight amount of fibrosis, but the descending thoracic showed considerable fibrous and fibrocalcareous sclerosis; so that there was a good deal of sclerosis of the aorta and great branches.

The liver weighed 985 grams. (Normally 1200-2400.) That is a small liver, but other than for a mass of metastatic new growth tissue 6 cm. by 4 cm. it was negative. The spleen weighed 115 grams, rather small but otherwise negative. The kidneys combined weighed 190 grams, small, but other than for a little atrophy negative. The small weights given here run true to form, because all of the organs were small with the exception of the heart, which may be associated with the arteriosclerosis or it may not.

The bronchopneumonia was very slight in amount.

The new growth was a squamous-cell carcinoma.

DR. CABOT: If you were asked the cause of the hydrothorax what would you say?

DR. RICHARDSON: I don't know. It is puzzling.

DR. CABOT: There was some edema in life. She had had dyspnea too. Do you think that the glands along the esophagus were enough to cause her sensation of dysphagia high up?

DR. RICHARDSON: It was two centimeters across,—not very large.

DR. CABOT: We had to account for a set of feelings in the region of the diaphragm which she had early and then some feelings of difficulty in swallowing higher up, and I don't know anything better to say than what I said before necropsy. As to this hydrothorax and slight ascites, I have rather vaguely in mind other cases in which we have had cancer with edema not explained by local pressure. I don't think they are very rare, even though we are not able to say anything more than that cancer and general edema are both there in the same patient.

CASE 12062

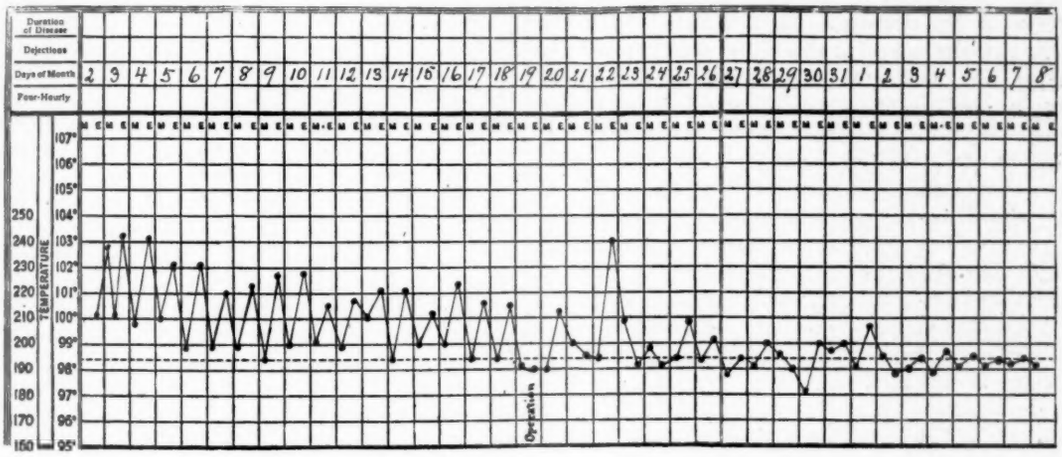
MEDICAL DEPARTMENT

An Irish dairy farmer forty-six years old entered the hospital December 2. The chief complaint was unexplained fever of eight weeks' duration. Three months before the onset of this, however, he noticed loss of appetite. Three weeks before the onset he worked for two hours cleaning out a blocked cesspool. He noticed no ill effects.

Eight weeks before admission he began to have occipital headaches lasting all day and growing more severe until in a week the pain was almost unbearable, "sharp, burning, stinging," radiating around both sides of the head and stopping at the eyes. Since the onset of the headache he had had increasing loss of appetite, progressive weakness and intermittent fever, 100° to 104°, with periods of normal temperature for one or two days. He had many chills; for the past week one daily at three or four p. m. lasting half an hour to an hour. A week after the onset he noticed that his breath had a very

foul odor, though there was no abnormal taste. He had no rhinitis or sore throat. His bowels had been constipated; he had taken a teaspoonful of castor oil every day. He had been in bed most of the time for eight weeks. There had been no cough, chest or abdominal pain, jaundice or melena.

His family history and marital history were good. His past history was uneventful except for repeated tonsillitis and sore throats since childhood. He had tonsillectomy at eighteen and again at twenty-eight. After the second tonsillectomy he had no more sore throats. At eighteen he went to South Africa with the army for a year. Seven years before admission he was operated upon at the Eye and Ear Infirmary for antrum disease. The following year he had hemorrhoidectomy. There were no symptoms referable to the cardio-respiratory, gastro-intestinal, genito-urinary or neuromuscular systems. He denied syphilis and gonorrhea by name and



symptoms, and gave no alcoholic or drug history. His best weight was 196 pounds, his present weight 155. Before the onset of the present illness he weighed 178. He worked habitually from three or four in the morning until ten at night. He was an intelligent, coöperative man and gave an apparently complete history.

Physical examination showed a somewhat undernourished man lying flat in bed in no discomfort and not acutely ill. Skin hot. Head negative. Sclerae clear. Tongue dry, coated. Many capped teeth. Pyorrhea. Small glands felt in epitrochlear, inguinal and axillary regions. Thyroid not enlarged. Heart and lungs normal. B. P. 120/65. Abdomen flat. No spasm. There was a questionable mass in the right upper quadrant descending with respiration, suggesting gall-bladder or kidney. There was tenderness in this region. The spleen was just palpable with the patient on the right side. The pupils, reflexes, extremities and rectal examination were negative.

Laboratory data: Urine normal. Renal function with phenolphthalein 40 per cent. in two hours. Blood: leucocytes 7,300, 7,100, 8,550, 6,050. Differential count: polymorphonuclears 61 per cent., lymphocytes 30 per cent., large mononuclears 5 per cent., eosinophils 1 per cent., basophils 3 per cent. Hemoglobin, Tallqvist, 75 per cent. Red cells 4,000,000-4,125,000. Stained smear: slight achromia and slight anisocytosis, no stippling, no parasites seen; platelets normal. Stools fluid, soft, brown; no amebae or actinomycotic granules seen. Wassermann negative. Widal negative on two occasions. Several urine and stool cultures negative for typhoid. Blood cultures on two occasions, no growth. Blood non-protein nitrogen 29 mgm. per 100 c.c. Icteric index 5. Throat consultation: Chronic infected tonsillar remnants. X-rays: Left antrum less radiant than right. Other sinuses negative. Absorption both roots of both lower central incisors. Kidney outlines made out, left somewhat larger than right. Small dense shadow in region of lower pole on right, probably an artefact but possibly a stone. No other abnormal shadows present. Plate of chest showed no definite variation from normal. Barium meal showed no abnormalities in the stomach or duodenum. Appendix not seen. Graham test (oral): Gall-bladder well filled at 15 hours after ingestion of salt. It was normal in outline and density. No evidence of cholecystic disease. Biliary drainage: Fair flow of dark colored bile, very viscid, very much increased pigment content. Sediment showed large numbers of cholesterin and calcium bilirubinate crystals. No growth on culture.

The temperature was as shown in the chart. The pulse varied between 70 and 80. The respirations were usually about 20.

There was a gradual improvement in appetite and strength coincident with the drop in temperature during the first two weeks.

December 19 operation was done. Except for a chill December 22 with a temperature of 103° the patient made a good convalescence. January 8 he was discharged, apparently completely cured, with a prescription for petrolagar and phenolphthalein for catharsis.

Discussion

BY JAMES H. MEANS, M.D.

The patient was on the medical service for seventeen days. As will be seen in the temperature chart, during that entire period he was running a picket fence type of temperature, down in the morning, up in the afternoon, without any real tendency toward defervescence. The pulse was not especially rapid, being between seventy and eighty most of the time. The respiratory rate was not increased.

The problem of course was one of the differential diagnosis of long continued fever, and narrowed itself down therefore to a question of typhoid, tuberculosis or sepsis in some form. Malaria had been considered by his local physician at the beginning on account of the regularly recurring chills and fever, and for a week or more he had been treated with large doses of quinine, which had no noteworthy effect on the progress of his disease. This coupled with the fact that in the hospital the blood was repeatedly negative for malarial organisms seemed definitely to exclude the possibility of malarial infection. Typhoid seemed to be definitely excluded by two Widal reactions frankly negative to the typhoid bacillus, the alpha and beta paratyphoid bacilli, two negative blood cultures and three stool and three urine cultures all negative for typhoid. Furthermore the patient at no time presented any rose spots, nor did his mental state suggest typhoid. The fever was, as will be seen in the chart, much more intermittent than is the usual fever in typhoid.

Tuberculosis somewhere in the body was of course given very serious consideration, and the character of fever not only is compatible with tuberculosis but even suggestive thereof. So too is the fact that at no time was there any leucocytosis. Neither physical examination nor X-ray of the chest however showed any evidence of tuberculosis of the lungs, and no positive evidence of tuberculosis in any other part of the body could be found after careful search. The entire gastro-intestinal tract was negative by X-ray examination, and examination of the urinary tract showed nothing positive except a questionable renal calculus by X-ray.

Various types of sepsis were considered as possibilities, those most seriously considered being endocarditis and the intermittent fevers of either biliary or urinary tract infection. The heart showed no abnormality either by physical examination or X-ray, nor were there any petechiae, clubbed fingers, or nephritis that might suggest endocarditis.

In spite of the finding of a questionable renal calculus by X-ray the absence of any other evidence pointing toward the urinary tract was regarded as impressive, and attention finally focused chiefly on the gall-bladder or the left antrum, which was cloudy by X-ray, as possible foci for infection. The gall-bladder as the probable source was favored by the finding of a certain amount of definite tenderness below the right costal border, with a questionable mass in that region, and by Dr. Chester M. Jones's discovery by means of the duodenal tube of a pathological type of bile. The bile so obtained was dark, contained increased pigments denoting disturbed liver function, and a sediment loaded with cholesterol and bilirubin crystals. Dr. Jones makes the remark on this finding, "With rare exceptions I have always found these only in connection with gall-stones. Diagnosis, hepatic disease with a possibility of cholelithiasis. Exploratory certainly indicated." Against this finding we have from the X-ray Department a negative Graham test.

Since the patient showed no sign of improvement, however, after two weeks in bed, on December 14 I made the following note: "I agree that exploration is advisable. I should be glad to see it done. Chronic gall-bladder or biliary infection seems the most likely diagnosis. He may need cholecystectomy, and if not, gall-bladder drainage may be well worth while." Dr. Simmons was willing to undertake the exploration, and we will now ask him to make his comments upon the result thereof.

Dr. Channing C. Simmons: An incision was made in the gall-bladder region splitting the fibers of the rectus muscle. The abdomen was opened without incident. The liver was possibly slightly enlarged. The gall-bladder was found very much thickened, with a few adhesions about it. The gall-bladder lay well under the liver edge and could not have been felt by abdominal palpation before operation. This may account for the fact that there was little abdominal spasm, as a gall-bladder of this type usually causes much abdominal spasm and tenderness. The stomach and duodenum appeared normal, and the kidney was normal to palpation. The gall-bladder was delivered easily and was removed without incident. The cystic duct was practically obliterated and would not admit a fine probe. On account of the fact that the patient had had septic temperature, having had biliary disease for some time, it seemed advisable to drain the common duct, as there was a strong probability of cholangitis, although the liver was not enlarged. This was done without incident. A cigarette wick was placed to the stump of the cystic duct and the wound closed in layers.

On opening the gall-bladder after removal the walls were found to be very thick, edematous, and fibrous. The mucous membrane was thickened and in places appeared to be absent. At one point in the wall there was an indurated area rather suggestive of beginning carcinoma. There were no stones, the gall-bladder containing ropy bile and considerable mucus.

PATHOLOGICAL REPORT

A large thick-walled gall-bladder. Microscopical examination shows fibrosis and formation of Luschka's tubules. No malignancy.

Chronic cholecystitis.

FURTHER DISCUSSION

DR. SIMMONS: The post-operative course was uneventful except that the patient had a chill with a temperature of 103° on the third day. The bile which was first drained from the common duct was somewhat thick and dark colored, but in the course of four or five days appeared normal.

DR. JOHN D. CAMP: Films of the gall-bladder taken fifteen and eighteen hours after the oral administration of sodium-tetraiodophenolphthalein showed the gall-bladder to be well filled with the dye. The gall-bladder was of normal size and the shadow of homogenous density. A film made after the patient had eaten a meal showed the gall-bladder to be considerably smaller in size; much of the dye had been evacuated from it.

The extent of pathology found by the surgeon and the pathologist is interesting when compared with the response to the Graham test. It is evident that in spite of the disease the gall-bladder was still able to concentrate the drug and change in size. This illustrates another possible source of error in cholecystography, for it is evident that cholecystic disease may be present and yet the concentrating ability of the gall bladder not be interfered with.

DR. CHESTER M. JONES: The chief points of interest in this case are the large number of negative findings in view of marked gall-bladder pathology. In reviewing the case it is true that there had been definite tenderness on several occasions to deep palpation in the right upper quadrant, so much indeed that several men who saw the patient suggested the possibility of liver abscess after having considered the unexplained septic temperature. The positive findings made after studying the duodenal contents would seem to indicate that such a means of investigation is distinctly worth while even in the face of a negative Graham test. Like every other laboratory test the Graham test cannot be expected to produce satisfactory results in every case. Any other means of investigation that can be taken advantage of should be employed.

DR. MEANS: This case, together with the operative findings, has been very instructive to us all. While not typical Charcot's fever it still is an intermitteent fever with malaria-like chills resulting from gall-bladder disease, which emphasizes the importance of suspecting such a focus in any long continued febrile state.

FOLLOW-UP NOTE

February 2 the patient was seen by Dr. Simmons, and said he felt very well indeed. He had gained six and a half pounds since discharge. He had an excellent appetite, could eat anything; he had not been able to do this for the past three or four years. He had no complaints of any sort. There was a small sinus in the wound. He was entirely satisfied with the result, and very grateful. He was about to go to Florida for a two weeks' vacation. After this he intended to resume work.

DIAGNOSIS

Chronic cholecystitis.

CASE 12063

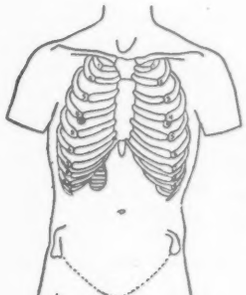
SURGICAL DEPARTMENT

A widow seventy-eight years old entered September 14 complaining of soreness throughout the abdomen. She was so old, feeble, ill, and deaf that the history was difficult to obtain. Her daughter died of cancer of the womb. The patient had always been very strong until the present illness. She had had frequent headaches all her life, but had never had any illnesses.

Four years before admission she had her first attack of soreness in the median epigastric region, associated with jaundice, the vomiting of green material, very dark urine, but no clay colored stools. Ever since this attack she had had jaundice in varying degrees and more or less epigastric soreness coming on in attacks lasting a few days and associated with chills. The present attack began two months before admission with sudden onset of chills. She had been confined to bed practically all the time. Before the onset she had not felt well. During the attack she had had more or less "easy pain," with occasional sharp pains, always in the epigastrium. There was very little pain in the back, although there was some in the right flank. The urine was very brown. The stools were not clay colored. Her bowels had not moved for two weeks, as she had eaten nothing. Eating caused

nausea. The pain had never been related to meals. She believed she had had some recent loss of weight.

Examination showed a very feeble, jaundiced old woman with very loose skin showing evidence of the loss of a great deal of weight. There was brown pigmentation under the breasts. The sclerae were yellow. The ears showed slight deafness. Half the teeth were missing; the rest were fair. The breath was foul. The apex impulse of the heart was not seen or felt. There was no enlargement to percussion and no other abnormality of the heart or arteries. The blood pressure was 110/80. The abdomen showed general tenderness, more marked in the right upper quadrant and epigastrium. A questionable edge of the gall-bladder was palpable (see diagram).



General abdominal tenderness, more marked in the right upper quadrant and epigastrium. Questionable edge of gall-bladder palpable.

Rectal examination showed a few hemorrhoids. The knee-jerks were not obtained. The rest of the examination showed nothing of significance.

Before operation the temperature was 99.4° to 102.1°, the pulse 72 to 88, the respiration 23 to 31. The amount of urine is not recorded. The urine was dark, specific gravity 1.020, the slightest trace of albumin at the single examination. The sediment showed bile and 4-10 leucocytes per high power field. The blood showed 12,000 leucocytes, 85 per cent. polynuclears, hemoglobin 70 per cent., 3,770,000 reds, showing much achromia and moderate anisocytosis. No Wassermann is recorded. The clotting time was 5-7 minutes, with calcium chloride 6 minutes. The clot in one hour was good. The stools were brown and showed no occult or macroscopic blood at two examinations.

September 17 operation was done. Next day she was in fair condition, with no vomiting. She was given a subpectoral of 2½ per cent. glucose. Two days later she was in very poor condition. The heart was absolutely irregular, and there were râles at the right base. She was placed on a high head rest. Digitalis was started and she was given subpectorals. In the afternoon she was comatose and sinking. That night she frothed at the mouth. There were definite signs of a pneumonic process at the right lower lobe. The heart was regular and rapid. The morning of September 21 she died.

Discussion

BY LINCOLN DAVIS, M.D.

This attack is very suggestive of gall-stones,—pain, soreness, vomiting, jaundice.

The chills of course make one think that infection is present, a cholangitis possibly.

I have been quite struck by the frequency of pain in the back. Of course it is a textbook symptom, pain in the shoulder-blade, but nevertheless it is very constant in gall-stone attacks. I should say it would be present in fifty per cent. of the cases. Sometimes it is not the right shoulder-blade but the left.

I suppose it is not quite literally true that her bowels had not moved and she had eaten nothing for two weeks. Patients often say that. I usually take it with a grain of salt, don't you, Dr. Cabot?

Dr. Cabot: I think people's bowels do really go without movements more than two weeks. I think they eat something now and then.

Dr. Davis: We can hardly speak of the edge of the gall-bladder. The edge of the liver or the gall-bladder itself was questionably palpable.

The striking point about this case is, I think, that in the first place the patient was old, seventy-eight years. She had had attacks quite typical of gall-stone colic for a number of years, and the recent attacks had been accompanied by chills, showing infection. She showed some jaundice and some anemia. The clotting time was practically normal. But such a case as this would certainly be considered a very poor risk, and a surgeon would not be eager to operate. However, there seems to be no other procedure. We cannot expect relief from any other measure. It is the kind of case in which the surgeon is reluctant to operate yet feels obliged to do so.

The fact that the patient was jaundiced and yet there was bile in the stools would seem to be evidence against the presence of a stone in the common duct. One would be tempted in such a case merely to drain the gall-bladder and remove what stones there were,—do a cholecystot-

omy rather than a cholecystectomy. It is a simpler and quicker operation, and sometimes can be done under local anesthesia and sometimes cannot.

DR. DAVIS'S PRE-OPERATIVE DIAGNOSIS

Cholelithiasis.
Cholecystitis.
Cholangitis.

PRE-OPERATIVE DIAGNOSIS

Gall-bladder stones?
Obstruction of the common duct?
Carcinoma of the head of the pancreas?

OPERATION

Gas-ether. Through a high right rectus incision the abdominal cavity was opened. The gall-bladder was found distended. It contained numerous large stones. It was drained, scooping the stones from it. The common duct was found dilated to a diameter of three-quarters of an inch. Upon opening it a large quantity of inspissated bile with a suggestion of an odor escaped. A probe was passed up and down. The finger was also inserted into the duct. No stones were felt. The head of the pancreas felt slightly enlarged but not definitely malignant. The common duct was washed out with salt solution and a catheter was inserted into the duct for drainage and fastened. A large rubber tube was fastened into the gall-bladder for drainage.

FURTHER DISCUSSION

I should not consider carcinoma of the head of the pancreas at all. The symptoms were of long duration. There was bile in the stools, the gall-bladder was not markedly distended, and the whole picture does not seem to me indicative of carcinoma of the pancreas. She may have had partial obstruction of the common duct from stone possibly, and the fact that she had chills would indicate that to a certain extent. But I should favor gall-stones with cholecystitis and cholangitis.

Three-quarters of an inch is very large for the common duct.

I should commend this operation. Ether undoubtedly would be necessary if one were to explore the common duct. If we find a dilated gall-bladder with stones and also a dilated duct we certainly would hardly dare not open it to see if there was obstruction.

The prognosis of such a case in such an old patient, operated on with gas and ether, would be poor merely from the shock of the operation. Then there is the danger of hemorrhage. It does not state here whether she drained any bile or not.

MISS PAINTER: There was profuse drainage of bile.

DR. DAVIS: We like to see that, to show that the liver has not shut down.

I should think that this patient, an old woman in poor condition, who had an infected gall-bladder probably with some cholangitis and a distended common duct, was a very poor operative risk, and I should think that she simply sank from the shock of the operation. The necropsy probably will show some terminal pneumonia, but I should not expect necessarily to find any evidence of peritonitis or hemorrhage.

DR. CABOT: What makes these common ducts get so big?

DR. DAVIS: This is very large, of course. It means obstruction usually, dilatation from obstruction. This patient very likely had a pancreatitis from her infection, and that would partially close the ampulla and might lead to some dilatation of the duct. Of course the duct is enormous when we have carcinoma of the head of the pancreas.

DR. CABOT: Are those the biggest ducts?

DR. DAVIS: I do not know that they are any bigger than the stone cases. Both are very large.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Chronic cholecystitis.
Cholelithiasis.
Hypostatic pneumonia. Bronchopneumonia.
Hypertrophy and dilatation of the heart.
Cholecystostomy and choledochostomy.

DR. LINCOLN DAVIS'S DIAGNOSIS

Cholelithiasis.
Cholecystitis.
Cholangitis.
Terminal pneumonia?

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Adenocarcinoma of the duodenum.

2. *Secondary or terminal lesions*

Dilatation of the bile and pancreatic ducts.
Chronic interstitial pancreatitis.
Cholecystostomy and choledochostomy.
Purulent cholecystitis.
Localized peritonitis.
Hypostatic pneumonia.

3. *Historical landmarks*

Chronic pleuritis.

DR. RICHARDSON: She was a well developed, stout white woman.

DR. DAVIS: Was she stout? I thought she was emaciated.

DR. RICHARDSON: No, she was stout.

The skin generally was sallow, with a slight brownish tinge in places, possibly a slight icterus. The peritoneal cavity was generally negative, but in the region of the gall-bladder there was a small localized collection of pus, and about midway of the operation wound a sinus led down to the region of the gall-bladder.

The stomach, pylorus and intestines, other than for the duodenum, were negative. The retroperitoneal glands along the region of the head of the pancreas were somewhat enlarged, firm, and grayish.

The thoracic organs showed nothing of note.

The gall-bladder presented the operation wound. The mucosa of the bladder was coated in places with fibrinopurulent material, and the bladder contained a small amount of pus,—cholecystitis. The common bile duct in the upper part presented a surgical opening. The duct was markedly dilated along its entire length and opened freely into the duodenum. The mucosa of the duct was smooth. No stones were found anywhere. The duct of Wirsung also was dilated as far down as the tip of the tail. It contained much pale mucus-like material, but the mucosa was smooth and the duct itself otherwise negative. The pancreas, however, showed considerable chronic interstitial pancreatitis.

In the duodenum there was a cauliflower-like ring of cancer extending around the intestine, and curiously enough with that we have dilated ducts with perfectly free openings. Did they find stones at the time of operation?

DR. DAVIS: Yes, in the gall-bladder.

DR. RICHARDSON: Of course those ducts dilated for some cause. There were no stones in them at the time of necropsy. Whether there had been previously or not I do not know. There may have been. Of course there is the possibility that this growth, which was soft and strung around the wall, may at some time have obstructed the openings, but that in the necrosis or the general softening they became open again.

DR. CABOT: You would not speak of this as cancer of the ampulla itself, would you?

DR. RICHARDSON: No; we could not make that out. The ampulla rested in the region of the upper margin of the new growth.

DR. CABOT: But we are accustomed to say that cancer of the duodenum itself, aside from the ampulla, is very rare.

DR. RICHARDSON: Yes, it is rare. The cancers of the ampulla however are small and confined usually to that region.

DR. DAVIS: It seems to me this is a very remarkable finding. I never heard of such a thing before. Certainly we are led to suppose that primary cancer of the duodenum is very rare.

DR. RICHARDSON: Yes; but it occurs.

A SURGEON: You could not tell from the histological picture?

DR. RICHARDSON: The sections showed a complicated tubular structure more like the tubules of the duodenum.

DR. CABOT: Why did she die?

DR. RICHARDSON: Hypostatic pneumonia. Did she have any icterus previously?

DR. DAVIS: Yes. Moderate.

DR. RICHARDSON: That could be if the ducts had been involved by the growth and shut off sufficiently so that the ducts dilated and later on the constriction let up. Or else we have to suppose there was a stone. Some of these cases of cancer of the duodenum show intermittent jaundice.

DR. DAVIS: I saw a case somewhat similar to this a while ago, where the patient was deeply jaundiced and the gall-bladder contained no stones. It was somewhat shrunken. The duct was very large but not distended. It was opened and a large-sized catheter would go through into the duodenum; no stones could be felt anywhere. My only explanation of the case was that she had had a stone and had passed it. I could not prove it. She had been jaundiced up to the time of the operation. Of course she may have had something of this kind. I could not feel it with my fingers.

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MEDICAL TUITION COSTS

THE *New York Times* for January 31 comments interestingly on the comparison between medical tuition costs of today and past years, as well as the greater facilities for medical study that are being offered. In 1800 we had four medical schools for 5,000,000 people, and in 1860 sixty-five schools for a population of 31,000,000. Twenty schools ceased to exist or were suspended during the Civil War, but following the war the number multiplied very rapidly until by 1900 there were 160 for 75,000,000 people.

For the 100 schools in 188 0there were 11,826 students, on an average of 118 per school, with 3,241 graduates, an average of 32 for each school. In 1904 there were 160 schools with an attendance of 28,142 students. The population at this time was about 82,000,000, which meant a medical school for every 500,000 persons.

During the past fifteen years, according to the report of the Bureau of Education of the Department of the Interior, from which these figures were taken, there has been a tremendous development in the construction of large medical teaching plants. This has followed on a great wave of improvement in the standards of medical education.

This development of the schools meant enormously increased costs, requiring a higher income than could be derived from students' fees alone, although before 1900 most of the schools were maintained entirely on the fees maintained. An investigation of the academic year 1914-15 showed the average income of each school to be $68,277 of which $23,795 was from students' fees. The average of expenditures was $66,253, the average cost of instruction per student being $419.00, of which his fee covered only $150. For the year 1920-21 the average cost of instruction had increased to $655, whereas the average fee had increased to only $185.00 The average income of each school was $130,672, including $35,135 from students' fees. The average expenditure was $123,947, of which $46,162 was for full-time teachers, $21,131 was for part-time teachers, $19,068 for wages, and $36,974 for maintenance and supplies.

When we appreciate what must be the enormous expenditures of our larger schools, we can realize how little some schools must subsist upon to keep these averages as low as they are, and how limited must be the opportunities which they can offer.

THE USE OF LEAD IN THE TREATMENT OF CANCER

THE Bell treatment of cancer by the use of colloidal lead which was given publicity some months ago has been studied by Professor Francis Carter Wood, Director of the Institute of Cancer Research at Columbia University. He is quoted in the *New York Times* as having been convinced that temporary relief has followed the use of this treatment in one person in every five, but that the use of the remedy is extremely dangerous. The drug is "difficult to prepare, impossible to keep, and for the present must be handled only by those who are familiar with its use."

He felt, however, that the Bell treatment must be regarded as the most important advance since the advent of radium and X-ray.

The new treatment was worked out by Dr. William Blair Bell, Professor of Gynecology and Obstetrics at the University of Liverpool, and a group of scientific workers in association with prominent physicians backed by philanthropic citizens who are supplying necessary financial support.

Only those cases which are not considered suitable for surgical or other treatment have been subjected to the lead treatment. The use of the lead treatment subjects the patient to the danger of poisoning by this metal. Thus far about 250 persons have been treated. The injections of lead are given about a week apart; six injections being used if the study of the case warrants. During the treatment, the patient and his blood must be under careful observation and examined to determine whether lead poisoning is developing.

Further publicity will be given to the treatment as soon as it shall have been standardized. Thus far, however, since benefit (not cure) is observed in only 20% of the cases treated there is no adequate solution of the cancer problem in sight.

A GOVERNOR'S INTEREST IN MEDICINE

A CONSIDERABLE portion of Governor Alfred E. Smith's message to the Legislature of New York this year was devoted to medical subjects, paying especial attention to crippled children, public health activities, public health laboratories, county health administration, care of the insane, the prevention of insanity, the mentally defective children, occupational diseases, loss of vision, bovine tuberculosis and the illegal practice of medicine. On this last subject he said: "I renew the recommendation of a year ago that careful consideration be given to the protection of the people of the State from unlicensed and unqualified persons practicing medicine. The co-operation of the medical profession is an essential factor in the protection of the public health, as well as in the care of the sick. A very large part of modern public health is urging people to get the advice of their physicians before serious and perhaps incurable conditions have developed. Such effort comes to naught if unqualified persons are allowed to hold themselves out as physicians."

"The subject is a difficult one, but the State of New York should take the lead in establishing high standards of medical practice and providing a practicable plan for their enforcement. It is a matter of justice to qualified physicians and of protection to the public."

There seems to be a disinclination among many public officials to discuss medical matters, partly because the problems are not clear to those whose occupations have not led to a study of the situation and also because in matters of controversy one dislikes to take a prominent position until familiarity with the arguments has led to definite conclusions, so that doctors are encouraged when it appears that people in authority endorse the attitude of those who are working for progress pertaining to higher standards relating to medicine and its allied interests. With a larger conception of the importance of medicine officials will pay more attention to the problems involved.

ETHYL GASOLINE

THE dangerous qualities of tetra-ethyl lead, which is mixed with gasoline to improve its efficiency, has been studied by a committee of experts. Boston is represented by Dr. D. L. Edsall on that committee. The committee has submitted a preliminary report, according to statements published in the daily press, which sets forth that there are no reasons for prohibiting the sale of gasoline to which ethyl lead has been added under proper regulations.

A study of 252 persons exposed to the exhaust fumes of this gas is the basis of the conclusions reached by this committee. Lead poisoning or other diseases were not found which could be attributed to this gas.

The danger exists, however, if precise regulations are not observed in the manufacture and blending of this form of lead and gasoline. Some deaths were reported several months ago among workers in the laboratories where tetra-ethyl lead was made and the virulence of this poison led to the study of its dangers by this committee. The committee has asked for a continuance of the study of the problems involved in the manufacture and use of this lead compound. This, of course, indicates that the study thus far conducted has only dealt with one feature of the problems involved.

RESERVE YOUR TIME FOR THE EVENING OF FEBRUARY 24

ANOTHER interesting meeting has been scheduled by the Surgical Section of The Suffolk District Medical Society. In the evening of February 24 at the Medical Library, Dr. Dean Lewis, Professor of Surgery at Johns Hopkins University, will deliver an address under the title of "Post-operative Care of Surgical Cases" to be followed by an address by Dr. John Bryant on "Surgical Convalescence: Medical Aspects."

Dr. Lewis has been an enthusiastic student of his subject which is of great importance both to the patient and the surgeon. It is sometimes very evident that surgical skill so far as operative technic is concerned is not followed by the best results. The immediate relief is not always evidence of cure. The busy surgeon after removal of stitches may at times feel that the rest of the problem must be solved by the patient or his physicians. The elation following the successful removal of a tumor, a gastro-enterostomy or the repair of a broken bone may be of short duration unless such cases are given adequate post-operative care. Unforeseen disorders may have to be corrected by prolonged attention to details.

Many articles by Dr. Bryant have been published in this JOURNAL setting forth the problems of convalescence. Many students of this phase of illness have come to feel that patients have suffered great injustice and scientific medicine has been discredited because of post-operative neglect. The attending physician sometimes seems to feel that all responsibility has been shifted to the operating surgeon and the surgeon in turn after doing his work well may think that the physician must resume his oversight. Or the difficulty may be with patients for they often expect immediate recovery and cannot understand that the derangements and unusual

habits of illness may impose burdens on the human machine which cannot be immediately eliminated.

The greatest surgeons and the best hospitals have a follow-up system and try to learn the end results but there is often a hiatus between the time of leaving the surgeon and the follow-up report which should be better bridged in an appreciable number of cases.

It is because of an understanding of the obligations of the profession that this subject has been chosen with the hope that neglect if any exists may be overcome and better results obtained. These men will help the profession to understand and meet the problems involved in post-operative and convalescent care.

Although the meeting is a Suffolk District function, this Society cordially invites all who are interested in the subject to attend this meeting.

Put February 24 on your list of appointments

THIS WEEK'S ISSUE

CONTAINS papers by the following named authors:

BLUMER, GEORGE, M.D. Cooper Medical College, San Francisco, California 1891; David P. Smith Clinical Professor of Medicine, Yale Medical School; Member, New Haven City, New Haven County and Connecticut State Medical Societies and Association of American Physicians, et al. His subject is "The Tragedies of Tooth Extraction," page 233.

O'REILLY, W. F., M.D. Harvard Medical School 1903; F. A. C. S. His subject is "Relation of Surgical Posture to Post-Tonsillectomy Pulmonary Abscess," page 237.

MCCRUDDEN, FRANCIS, S.B.; M.D. Harvard Medical School 1908; Assistant Medical Director, New England Mutual Life Insurance Co.; Visiting Physician, House of Good Samaritan; Physician to Out-Patients, Massachusetts General Hospital. His subject is "The Conservation of Life and Health by Means of Periodic Health Examinations," page 240.

QUINN, MILTON J., A.B.; M.D. Jefferson Medical College; National Board Diplomate; Member, Massachusetts Medical Society, Manchester (Connecticut) Medical Society and the Society for Study of Asthma. His subject is "Malaria in New England," page 244.

COCHRANE, ROBERT C., S.B.; M.D. Harvard Medical School 1911; F. A. C. S.; Member, Boston Surgical and New England Surgical Societies; Instructor in Surgery, Harvard Medical School; Visiting Surgeon, Boston City Hospital; Consultant to several hospitals in Boston and its suburbs. His subject is "Notes on the Treatment of Surgical Complications," page 247.

The Massachusetts Medical Society

THE MEETING OF THE COUNCIL

ON February third, 1926, the Stated Meeting of the Council of the Massachusetts Medical Society was held at the Boston Medical Library.

After the reading of the records of the preceding meeting, the President made appropriate references to deceased members and asked for coöperation in the work of the Legislative Committee after referring to certain bills which were later explained by the Secretary of the Committee in his report. Some of the important activities of this Committee have been set forth in circular letters sent to members of the Society.

The Committee of Arrangements gave a report of plans for the annual meeting which will be held in Springfield. The plans give promise of a very interesting series of meetings and also arrangements for social events. Especial attention will be given to entertaining the ladies. The Committee will welcome suggestions and constructive criticism.

Two eminent scientists, Professor Duane and Professor Bovie, were added to the list of Honorary Fellows.

Delegates were appointed to attend the annual meetings of the Medical Societies of the other New England States.

The report of the committee appointed to revise the list of approved medical colleges was not ready and the Committee was authorized to publish its report in the JOURNAL.

Dr. O'Brien's report of the doings of the Legislative Committee was interesting and the Council showed its approval by hearty applause.

The committee appointed to consider medical defense and insurance was not ready to make its final report and the verbal statement of Dr. Scudder was accepted as a report of progress.

All of the recommendations of the Committee on Membership and Finance were adopted without comment.

A committee was appointed to consider the matter of a women's auxiliary society.

The invitation extended by The Physicians' Home Corporation sponsored by several New York physicians, asking for coöperation, was referred to by the President and further discussed by Dr. W. P. Bowers, and a committee was appointed to consider all features of this project and report at a subsequent meeting of the Council.

Dr. E. A. Darling of Cambridge reported that he had been informed of certain criticisms of experimental work alleged to have been done by physicians by the Antivivisection Society and submitted a resolution which excited apprehension on the part of some of those present because it was felt that the subject demanded care-

ful and mature deliberation. This matter was also referred to a committee.

This brief statement of some features of matter considered is published with the hope that the official records of the proceedings which are being prepared by Dr. Burrage will be carefully studied. The full report will appear in these columns later.

The business was transacted with dispatch.

LEGISLATIVE NOTES

THE matter of compulsory vaccination and the efforts to weaken the present law are presented in two bills.

Mr. Slater Washburn petitions for extending the vaccination requirements as set forth in House bill 386 which reads as follows:

"SECTION 1. Any child who has reached the age at which attendance at school is permitted or required, and who is otherwise eligible for enrollment, who presents a written statement, signed by either a parent or guardian, which declares that such parent or guardian is opposed to vaccination, shall not, as a condition precedent to admission to the public schools, be required to submit to vaccination, and shall be allowed to attend the public schools, except at the time of a threatened or actual outbreak of smallpox, when the school board may temporarily debar such child from the public schools.

SECTION 2. This act shall take effect upon its passage."

Dr. S. B. Woodward of Worcester will present his arguments in favor of this measure and will be supported by Public Health authorities and physicians. All who have any doubt with respect to the wisdom of vaccination should hear Dr. Woodward who has facts and opinions of the most convincing nature which will be set forth in his appeal before the Public Health Committee.

The opposition will be based on House 694 under the petition of F. Mason Padelford. He will probably be supported by the Medical Liberty League, Inc. The text of Dr. Padelford's bill is as follows:

"SECTION 1. Chapter seventy-six of the General Laws is hereby amended by striking out section fifteen and inserting in place thereof the following:—

SECTION 15. A minor under fourteen years of age who has not been vaccinated shall not be admitted to a public or private school except upon presentation of a certificate signed by a registered physician that the physician has, at the time of giving the certificate, personally examined the child and that he is of the opinion that the physical condition of the minor under fourteen years of age is such that his health will be endangered by vaccination. The said certificate shall state the reasons for the opinion of the physician who signs it, and shall be valid only for one year from the date thereof. A minor under fourteen years of age who is a member of a household in which a person is ill with smallpox, diphtheria, scarlet fever, measles or any other infectious or contagious disease declared by the department of public health to be dangerous to the public health, or of a household exposed to such contagion from another household as aforesaid, shall not attend any public or private school during such illness until the teacher of the school has been furnished with a certificate from the board of health of the city or town, or from the attending physician of such person, stating that the danger of conveying disease by the child had passed.

SECTION 2. This act shall not be construed to affect the rights of any foreigner admitted to this country under treaty stipulations which are inconsistent herewith."

The conditions existing in this country seem to demand of all public spirited and intelligent citizens definite action. Physicians can bring the facts and arguments based thereon to the attention of the people but the responsibility rests on the people in the last analysis.

Society is responsible for unnecessary suffering and death and those who have definite knowledge must patiently and persistently place the facts before the voting population. The legislature will enact laws when it is shown that there is a popular demand for them.

THE HEARING ON HOUSE BILL 708

THIS hearing was held before the Joint Committee on State Administration, Senator Chamberlain chairman. The chiropractors attached their chariot to a star imported from New York State who occupied most of the time. His chief argument was that there is a demand for chiropractic practice and went on to state that chiropractors are operating in the state, and that they will continue to do so although the practice is contrary to law. He made the claim that chiropractic adjustment is not understood by physicians and that this system secures results not attainable by physicians, hence the chiropractor should be examined by those of his own faith and not by a hostile board. He illustrated his remarks by citing a case which according to his description might have been facial paralysis, and which after sixty days treatment by a chiropractor was cured. The criticism of his conclusion is obvious to a physician.

The objections to the bill were based on the wisdom of adhering to the present policy of Massachusetts which requires all applicants for medical registration to present evidence of a very modest requirement for premedical educa-

tion and knowledge of the fundamental sciences and principles upon which the structure of medical practice should be built. The matter of treatment is left entirely to each registrant except in certain instances where methods do not call for sectarian difference of opinion. The Board of Registration has always avoided questions which might impose an unfair handicap on an applicant.

The basic objections to the claim put forward by the chiropractors were supported by references to a decision of the Supreme Court of Massachusetts written by Chief Justice Rugg in which it is clearly stated that any form of treatment designed to cure or benefit a sick person is construed as the practice of medicine.

Although several members of the committee were not present it was evident that there is a purpose in the minds of those who heard the argument to deal with the bill for the best interests of the state so far as they may be able to find a solution of the problems involved. The objections were logically presented by Dr. J. S. Stone, Dr. George N. Bigelow, Dr. C. E. Mongan, Dr. Robert H. Nichols and others.

All persons interested in the opposition to the chiropractic bill may still have influence if members of the legislature are informed of the wish to have Massachusetts continue its policy of maintaining the single standard for all practitioners of medicine.

MISCELLANY

THE ANNUAL BANQUET OF THE BOSTON DISPENSARY

On Tuesday evening, February second, Dr. J. O. Polak, Professor of Obstetrics at Long Island College Hospital, gave an address at the annual banquet of the Boston Dispensary officials. More than seventy-five visiting doctors and members of the staff of the dispensary were present. Dr. A. K. Paine presided.

The subject of Dr. Polak's address was "The Relation of the Out-Patient Department to Community Health." He felt that the dispensary is invaluable for the instruction of the student and graduate in the art of medicine and in the practise of surgery, and every dispensary should be the district nurse and welfare nurse for the community.

Dr. Polak is a most convincing speaker and his address was one of great interest.

INVESTIGATION OF CERTAIN TYPES OF WORK UNDER THE BOSTON HEALTH DEPARTMENT

The Finance Commission of the City of Boston has employed Dr. William C. Woodward to make an investigation of the expenditures under the George R. White fund for health units. This special activity is a part of a general survey of municipal departments for the preparation of an annual budget and ascertaining the possibility of effecting economy. Mayor Nichols, it is stated in the daily papers, reports that criticisms have been made of the health unit plan.

Dr. Woodward was formerly Health Commissioner of Boston. His report and the recommendations of the Finance Commission will be awaited with interest by all persons interested in public health work.

LUCIUS N. LITTAUER GIVES FUND TO NEW YORK UNIVERSITY FOR RESEARCH IN PREVENTION AND CURE OF PNEUMONIA

New York University has received from Lucius N. Littauer, wealthy glove manufacturer, funds to be used for studies in the prevention and cure of pneumonia under the control of Dr. William H. Park, according to an announcement made recently by Chancellor Elmer Ellsworth Brown.

The gift has been designated as the "Lucius N. Littauer Fund for Studies in the Prevention and Cure of Pneumonia," Chancellor Brown further announced. A check for $5,000 was received from Mr. Littauer, together with a letter to Chancellor Brown stating that checks for the same amount would be sent each six months thereafter to continue the work.

Mr. Littauer's letter of gift follows:

My dear Chancellor:

I am enclosing to you my check for $5,000 with the obligation of sending you a check of the same amount each six months hereafter that the studies for the prevention and cure of pneumonia, under the control of Dr. William H. Park may be undertaken through the facilities of the Bacteriological Laboratory of New York University and of the City Health Department to the end that the monies hereby contributed to your institution may be disbursed under the authority of Dr. Park.

Trusting that your University will assume the responsibility of the supervision of this work, which, for my part, I enter upon with enthusiasm and in the hope that some benefit and valuable result may be achieved thereby, I remain

Very sincerely yours,
(Signed) Lucius N. Littauer.

The gift has been accepted under the conditions specified.

THE CAMPAIGN TO RAISE FUNDS FOR THE MASSACHUSETTS GENERAL HOSPITAL

An announcement to the public of New England that an appeal is soon to be made for a fund of $3,250,000 (three million, two hundred

and fifty thousand dollars) was issued yesterday by the trustees of the Massachusetts General Hospital. The fund is to be used for construction of additional hospital facilities and for the endowment of research and education in the field of medicine and surgery, in order that the hospital may carry on the work which has made it one of the great medical and surgical centres of the world.

Within a few weeks an intensive campaign is to be conducted throughout Massachusetts and in neighboring States for raising this great fund. Organization for the campaign has so far advanced as to warrant the issuing of the announcement.

To correct a popular misunderstanding, the Trustees explain in their preliminary announcement that the Massachusetts General Hospital is not supported by either the State or the City. For more than a century it has been maintained by the donations of public-spirited citizens.

Nor has its service to those in need of medical and surgical aid been confined to Boston alone. A majority of the many thousands who have received help from the Massachusetts General Hospital in recent years resided outside Boston. A check-up shows that they came from 574 different places in Massachusetts, 222 in New Hampshire, 77 in Vermont, 202 in Maine, 60 in Connecticut and 48 in Rhode Island, as well as from every other State in the Union.

Since its establishment in 1821, the hospital, the oldest in New England, has carried on its great work of relieving suffering and advancing scientific knowledge without help from City or State. But the constantly increasing demands made upon it by the public and by the medical and surgical profession have become so great that they can no longer be properly met without immediate additional facilities.

New buildings must be erected, and existing structures enlarged to provide room for more patients. And one of the hospital's greatest services to the public—the study of disease, its causes, treatment and cure, and the dissemination of that knowledge throughout the medical world—requires material endowment for its maintenance and expansion.

The Massachusetts General Hospital is not only a great New England hospital centre, but it is known almost everywhere civilization has penetrated. It was from the Massachusetts General Hospital that the use of ether as an anaesthetic was first given to the world. In the Bulfinch Building, the original hospital building, which is still in use, was performed the first painless operation. On that day, and with the development of modern asepsis, the seeming miracles of modern surgery were made possible.

Another notable gift of the Massachusetts General Hospital to humanity was the first correct diagnosis of the once-dreaded "inflammation of the bowels," now known as appendicitis, in the great majority of cases. To this discovery, and to the methods of treatment which were developed as a result of it, countless thousands owe their lives. It is for the continuation of work such as this that part of the fund is to be used.

Heretofore the financial assistance required by the hospital has been received from a comparatively small number of people. It is the hope of the Trustees that in answer to the coming appeal the entire community will rally to its support. The small gift, as well as the large, will be welcomed.

The announcement of the Trustees, issued from the hospital yesterday, explains in some detail exactly what they propose to do, and gives a comprehensive plan for making the institution of greater service to the public and to the medical and surgical profession.

"The Massachusetts General Hospital needs $3,250,000 for buildings and for endowment for research and education," the announcement runs. "The program of development is a conservative estimate of needs in buildings and endowment to meet the constantly increasing demands made upon the institution.

"Patients come to this hospital not only from Boston but from 1200 cities and towns in New England and from every State in the Union. From near and far those afflicted with obscure disease come here for observation and treatment.

"The Massachusetts General Hospital is not, as many assume, a State institution. It is maintained by gifts from humane and public-spirited men and women. For more than a century it has paid its own way without help from the City or from the State.

"The Trustees of the hospital will in a few weeks appear to the citizens of the City and the State, and to generous givers beyond the State, for gifts. This appeal will be made through the press and by Citizen Committees which are now being organized in the different trades in Greater Boston districts and in cities and towns of the State.

"The principal items in this program for development are:

"Bulfinch Building—Additions to and fireproofing of the original building must be provided. When the improvements are completed the Bulfinch Building will be safe from fire, and 106 surgical patients, 94 medical patients and 40 children, a total of 240 patients, will be adequately housed with all necessary modern facilities.

"Hospital For People of Moderate Means—This new branch of the hospital will be a great boon to people of moderate means in the community in their search for better health and better care in the time of sickness. The resources of this great institution will be made available for those who can pay a moderate amount for professional services and maintenance during illness.

"Mrs. Mary Rich Richardson has given $1,000,000 for the construction and equipment of this hospital. There is needed a further sum for endowment, the income of which will help to meet the operating expenses. It is proposed to erect a building to house at the outset about one hundred and fifty patients, together with the nurses needed for their care. As the demand increases, and it surely will increase, it is planned to build a Home for the care of these nurses. This will enable us to replace nurses by patients in the hospital building, so that it will eventually house about two hundred and seventy patients. This further development, while sketched here, is not a part of the immediate program.

"Out-Patient Building—The pressure of patients, the necessity of space for the development of modern methods and the great need of a close physical connection between the Out-Patient Department of this hospital and the Eye and Ear Infirmary demand extensive building developments.

"New Ward Building—Although the commuinty has grown rapidly, the hospital has added only a few beds in many years. The pressure upon it for admission of patients is great. The ward building will increase the capacity of the hospital by 150 beds.

"The modern X-ray and Radium Department calls for much space and expensive equipment. Last year 22,846 patients were treated in this department. This new ward building will provide the much needed space.

"Boiler House—Engineers declare the present plant inadequate for heating and furnishing steam to existing buildings, kitchens and laundry. They further report that the present building is not large enough for modern boilers. An entirely new plant is needed.

"Research—For the last thirty years or more, the progress of medicine has rested chiefly upon laboratory investigation. Here is made the diagnosis and the decision regarding the form of treatment, frequently including the surgical treatment.

"Though there are on record more than 200 diseases, the cause and satisfactory treatment for only ten have been so far thoroughly established. There is yet a vast amount of research to be done in the great medical centres to complete what is now but incomplete knowledge. A large endowment is needed to maintain and increase the work of this important division of the hospital."

The Trustees of the Massachusetts General Hospital are George Wigglesworth, Charles H. W. Foster, Nathaniel T. Kidder, Joseph H. O'Neil, Mrs. Nathaniel Thayer, Thomas B. Gannett, William Endicott, John R. Macomber, Sewall H. Fessenden, Robert Homans, Algernon Coolidge, M.D., and Edwin S. Webster.

RECENT DEATHS

EHRLICH—Dr. Henry Ehrlich, for 37 years in active practice in Boston, died Friday, February 5, 1926, at his home, 172 Commonwealth Avenue, at the age of 60 years.

Born in Boston June 7, 1865, the son of Samuel and Pauline Ehrlich, he received his education at the Roxbury High School and Harvard Medical School, graduating in the class of 1886. He went abroad in pursuit of his medical studies, attending clinics in Vienna, Heidelberg, Berlin and London. Returning to Boston, Dr. Ehrlich established himself in the South End, soon building up a large and successful practice which extended throughout Greater Boston. He had served as visiting physician to St. Mary's Infant Asylum and Lying-in Hospital in Dorchester. He was a Fellow of the American Medical Association and of the Massachusetts Medical Society.

Twenty-five years ago he served as a member of the Boston Bath Commission, of which he was at one time chairman. He also served as a trustee of the Leopold Morse Orphan Asylum. Besides his wife, Mrs. Sallie (Hecht) Ehrlich, he leaves two sons, Louis and Samuel Ehrlich, both of this city.

SHANNON—Dr. Nathaniel Vaughan Shannon died at his home in Cambridge, February 2, 1926, aged 59.

He was born at South Portland, Me., July 6, 1866, and was a graduate of the Massachusetts College of Pharmacy and of the University of Pennsylvania School of Medicine, class of 1894. He had practiced in Cambridge since graduation and was a member of the Cambridge Hospital staff.

He is survived by his wife, Mrs. Sarah Whitney Shannon, and a son, Whitney Cutts Shannon. He also leaves a brother, Judge Edward Weston Shannon of Providence, R. I. He was a member of the Massachusetts Medical Society, the Cambridge Medical Improvement Society and the Cambridge Lodge of Odd Fellows.

PERRY—Dr. Henry Joseph Perry, dermatologist of Boston, died at Needham, January 4, 1926, at the age of 55.

Dr. Perry was the son of the Rev. Edward A. and Mary A. Perry of Hanover, where he was born January 28, 1871. He was graduated from Tufts College in 1892 and from Harvard Medical School in 1896. During the two years following he was house officer in the Boston City Hospital. He served on the staff of the Boston Dispensary for six years, when he was made chief of the Department of Dermatology and Syphilology in 1918. In connection with this service he developed the largest clinic of its kind in New England.

Dr. Perry was elected president of the medical staff in 1918, and was constantly called upon to serve on many important committees. At the time of his death he was a member of the committee on records and the committee on hospital and dispensary, and was chairman of the committee on drugs and pharmacy. He served many years on the staff appointments committee.

He was also head of the Department of Dermatology at Evangeline Booth Hospital. From 1899 to 1918 he was assistant instructor in bacteriology in Harvard Medical School, and professor of bacteriology at the Massachusetts College of Pharmacy during the same period. He had been associate professor of dermatology at Tufts College Medical School since 1918.

He was a member of the Harvard Club of Boston and of the Belmont Springs Country Club; president of the New England Dermatological Society, vice-president of the Boston Numismatic Society, member of the Appalachian Mountain Club, American Numis-

matic Society, Boston Philatelic Society, Massachusetts Medical Society, American Urological Association, New England Urological Association, Boston Bacteriological Club, Boston Medical History Club, Nuttall Ornithological Club, Cooper Ornithological Club, Brookline Bird Club, Massachusetts Fish and Game Association, Boston Society of Natural History, Audubon Society and Boston Medical Library.

Dr. Perry is survived by three children, Henry J., Jr., Rosamond and Freeman, all now in Canada.

DEVINE—Dr. William Henry Devine, former director of school hygiene of Boston and surgeon-general of Massachusetts, died at his home in Milton, February 5, 1926, aged 65.

Dr. Devine was born in South Boston, where he made his home until a year or two ago, on July 22, 1860. After instruction in the public schools he was graduated from Harvard Medical School in 1883, served as house officer at the Carney Hospital, where he was to be visiting physician later, and settled in practice on East Broadway.

He was appointed assistant surgeon of the Ninth Regiment, M. V. M., in 1883, and retired as surgeon-general, with the rank of major, in 1908. Dr. Devine did splendid service during the Spanish-American War, advancing to the position of acting chief surgeon of the Second Division of the Second Army Corps. After the Spanish War, Dr. Devine resumed his office of medical director of the Second Brigade, M. V. M., and in 1904 was made surgeon-general on the staff of Governor Douglas. He subsequently served as president of the medical staff of the Carney Hospital in South Boston and was a member of the American Medical Association, the Massachusetts Medical Society and the Association of Military Surgeons.

Besides his wife, Mrs. Katherine G. Devine, Dr. Devine leaves four sons.

Dr. Devine had a winning personality and was highly thought of by his patients and by his associates in the profession.

BIGELOW—Dr. Charles Edwin Bigelow, for many years a Councilor of the Massachusetts Medical Society from the Worcester North District, died at his home in Leominster, February 1, 1926, at the age of 70.

Dr. Bigelow was a graduate of Brown University in the class of 1878 and of Jefferson Medical College, Philadelphia, in 1882. He settled in Leominster in that year. He had been chairman of the Board of Health and was a Past Grand Sachem of Massachusetts Order of Red Men.

OBITUARIES

RESOLUTIONS ADOPTED BY THE MASSACHUSETTS PSYCHIATRIC SOCIETY ON THE DEATH OF DR. CADY

Whereas in the death of Dr. Frederic Benjamin Mooers Cady the Society has sustained the loss of one of its early members and

Whereas until recently Dr. Cady has been in the active practice of neurology and psychiatry in our midst, it is fitting that notice should be taken of this loss. Dr. Cady was born in Cooperstown, New York, in 1881. He graduated from Harvard in 1903 and from Harvard Medical School in 1907, since which time he maintained an office in Cambridge. He began the study of psychiatry at the McLean Hospital and for twelve years was assistant to the Neurological Department at the Massachusetts General Hospital. During the war he served in the Medical Corps of the Army. For many years he was Secretary of the Middlesex South District Medical Society. Perhaps the most important contribution to medical progress came through his work in connection with the Cambridge Court. Though he served as Probation Officer for many years he advised the Judges and Court Officers of the 3rd District Court of Middlesex County in the disposition of cases. In this he did much to justify psychiatry before the Courts and educate a large group of people as to the practical importance of psychiatry in the administration of criminal law. He died of pulmonary tuberculosis on November 12, 1925 at the United States Veterans' Hospital No. 89, at Rutland, Mass.

Be It Therefore Resolved that it is with the is with the sincerest regret that the members of this society sustained the loss of so useful an associate.

DAVID CLARK, M.D.

Dr. David Clark, an obstetrician of note, of Springfield, died at his home in that city of heart disease, January 29, 1926, at the age of eighty-two. He was one of the oldest Fellows of the Massachusetts Medical Society, having joined in 1869. His name was placed on the retired list in 1908, although he had been active up to two years ago.

Dr. Clark was born in Brighton, O., on Feb. 8, 1843, a son of Harvey and Anna Fuller Clark. Shortly before his birth, Dr. Clark's parents moved from Hampden, Conn., where the family was prominent. He was the youngest of 10 children. Dr. Clark attended school at Antioch, O. When he was 18 years old the Civil War broke out and he enlisted in the 13th Ohio Infantry as a bugler. For three years he served in the Tennessee campaign and was given a leave of absence when he was wounded in side and head. Then he enlisted again with the 6th New York Infantry.

After the Civil War Dr. Clark took a business course in Hartford and lived with an uncle, David Clark, a prominent business man. He became interested in medicine during a visit to his sister who was the wife of Dr. George W. Swazey, at that time one of Springfield's leading physicians. With Dr. Luke Corcoran, Dr. Clark went to New York and studied medicine at Bellevue Hospital for a year. He then went to the medical school of the University of Pennsylvania and was given his degree in 1869.

In 1886 Dr. Clark continued a special study of obstetrics when he went to Europe and studied at the University of Vienna Maternity Hospital, at the University of Prague and at the famous Rotunda Hospital of Dublin. During the '70s and '80s he was city physician and was for a long period of years identified with mil-

itia activities. He was surgeon of the 2d Regt., M. N. G., for more than 25 years. He was unable to serve in the Spanish-American War because a year before it broke out he had been promoted to the rank of brigade surgeon, and men of that rank were not taken. However, when the surgeon of the Second Regiment died of fever, Dr. Clark went to Montauk and worked with the doctors caring for fever-stricken veterans.

He was for many years and at the time of his death a member of the board of managers of Wesson Maternity Hospital. He was a member of the Springfield Medical Club.

On Oct. 12, 1870, he married Ellen Maria Cowles of Springfield, who was a daughter of Asa F. Cowles, one of the founders of South Congregational Church. She and one daughter survive him.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DISEASES REPORTED FOR THE WEEK ENDING JANUARY 30, 1926

Anterior poliomyelitis	2	Ophthalmia neonatorum	14
Chickenpox	287	Lobar pneumonia	135
Diphtheria	79	Scarlet fever	358
Dog-bites	7	Septic sore throat	4
Encephalitis lethargica	1	Syphilis	37
Epidemic cerebrospinal meningitis	2	Suppurative conjunctivitis	7
German measles	75	Tuberculosis, pulmonary	106
Gonorrhea	85	Tuberculosis, other forms	13
Influenza	16	Tuberculosis, hilum	46
Malaria	1	Typhoid fever	6
Measles	1,584	Whooping cough	469
Mumps	115		

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING JANUARY 30, 1926

Diphtheria	48	Chickenpox	179
Last week	39	Encephalitis epid.	1
Diphtheria bacilli carriers	25	German measles	13
Whooping cough	88	Influenza	12
Last week	92	Mumps	30
Scarlet fever	109	Pneumonia, lobar	55
Last week	65	Septic sore throat	7
Typhoid fever	3	Tuberculosis, pulmonary	23
Last week	3	Tuberculosis, other forms	1
Measles	779	Gonorrhea	10
Last week	775	Syphilis	13
Bronchopneumonia	32		

RHODE ISLAND STATE BOARD OF HEALTH

CONTAGIOUS DISEASES REPORTED FOR THE THREE WEEKS ENDING JANUARY 16, 1926

Diphtheria	58	Cerebrospinal meningitis	1
Measles	1,430	Whooping cough	24
Influenza	36	Tuberculosis	12
Mumps	5	German measles	16
Scarlet fever	34	Paratyphoid fever	1
Typhoid fever	1	Ophthalmia neonatorum	4
Pneumonia	15		
Chickenpox	39		

NOTICE

A CADUCEUS—No. 15, with Massachusetts Medical Society designation has been found and sent to this office. The owner may have the same by applying to the BOSTON MEDICAL AND SURGICAL JOURNAL, 126 Massachusetts Avenue, Boston.

REPORTS AND NOTICES OF MEETINGS

CUTTER LECTURE ON PREVENTIVE MEDICINE

THE Cutter Lecture on Preventive Medicine by George E. Vincent, President Rockefeller Foundation, "Every Doctor a Health Officer," will be delivered at the Harvard Medical School Amphitheatre Building E, Thursday, February 11, 1926, 5 P. M.

These lectures are given annually under the terms of a bequest from John Clarence Cutter, whose will provided that the lectures so given should be styled the Cutter Lectures on Preventive Medicine and that they should be delivered in Boston and be free to the medical profession and the press.

The medical profession, medical and public health students, the press and others interested are cordially invited to attend.

THE AMERICAN CONGRESS ON INTERNAL MEDICINE

THE Tenth Annual Clinical Session will be held in Detroit and Ann Arbor, Mich., February 22-27, 1926.

Headquarters, Book-Cadillac Hotel (Registration, Information and Clinical Assignments).

Any person interested in this detailed program can secure one on application to the office of the BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON HEALTH LEAGUE, INC.

THE Annual Dinner Meeting will be held February 17th, at 271 Dartmouth Street, at 7 P. M.

Dr. C. E. A. Winslow, Professor of Public Health, Yale School of Medicine, and President of the American Public Health Association, will speak on "The Health Department and the Individual."

NEW ENGLAND HEALTH INSTITUTE

MAY 24-28 have been set aside for the New England Health Institute. The meeting this year is at Concord, New Hampshire, under the direction of Charles Duncan, M.D., Secretary State Board of Health.

Former Institutes held in Connecticut, Massachusetts and Maine have proven so successful that a mere announcement of the 1926 Insti-

tute should be sufficient inducement for all health workers to set aside these dates.

Announcements of the program will be made later.—*Bulletin Conn. Dept. of Health.*

BOSTON CITY HOSPITAL

STAFF CLINICAL MEETING

CHEEVER Surgical Amphitheatre, Thursday, Feb. 18, 1926, at 4 P. M. Demonstration of cases by members of the Medical and Surgical Staff. Discussion of the cases invited. Physicians, Medical Students and Nurses Invited.

JOHN J. DOWLING, *Superintendent.*

BOSTON CHILDREN'S HOSPITAL

A STAFF clinic will be held in the Amphitheatre on Friday, February 12, at 4:30 P. M. All physicians are cordially invited.

WILLIAM THOMPSON SEDGWICK MEMORIAL LECTURE

THE William Thompson Sedgwick Memorial Lecture, the fourth lecture in this series, will be given in Huntington Hall, 491 Boylston Street, Boston, Mass., on Friday, February twelfth, at five o'clock, by Charles Value Chapin, M.D., Sc.D., Superintendent of Health, Providence, R. I., on "Changes in Type of Contagious Disease." The public is cordially invited to attend.

NEW ENGLAND MEDICAL SOCIETY

THE New England Medical Society held its 43rd annual dinner and meeting January 28th, 1926, in the Loring-Greenough House, Jamaica Plain. The Sarah Bond Scholarship was awarded to Miss Alice Shepard, a senior, at the Woman's Medical College of Pennsylvania.

MEETING OF THE PROVIDENCE MEDICAL ASSOCIATION

THE Providence Medical Association held its regular monthly meeting, Monday, February 1st, 1926. Program: Symposium on Medical Education.

1. Pre-Medical Education. By Frank G. Wren, A.M., Dean, School of Liberal Arts, Tufts College.

2. Undergraduate Medical Education. By Alexander S. Begg, M.D., Dean, Boston University School of Medicine.

3. Post-Graduate Medical Education. By Sabuel R. Meaker, M.D., Secretary, Courses for Graduates, Harvard Medical School.

THE MEETING OF THE MASSACHUSETTS TUBERCULOSIS LEAGUE

THIS meeting was held at the Copley Plaza, February 2nd, 1926. The morning was given to discussions relating to seal sales, publicity and campaign work. A dinner was served at 12:30 after which the President, Dr. Kendall Emerson of Worcester, called the meeting to order. He referred to the loss sustained by the State in the death of Dr. Eugene R. Kelley, who had given freely of his time in advancing the campaign against tuberculosis.

Dr. Edward O. Otis, Ex-president of the League, gave an interesting and detailed history of the battle against tuberculosis, covering the work done in this and other countries and the important assistance rendered by the various associations which have been especially devoted to this work. He emphasized the importance of better economic conditions, early detection, better treatment and education as the important factors in the reduction of the mortality by over half the ratio of former years.

He was followed by Dr. John B. Hawes, 2nd, President of the Boston Tuberculosis League, who explained the work done by Dr. Horwood who had made a survey of the tuberculosis conditions in Boston. He endorsed most of the conclusions brought out in a report of the survey and affirmed that several features of the anti-tuberculosis campaign in the city had been faultly and that even drastic measures must be applied before we can feel that all is being done to diminish the incidence of the disease and afford the best possible treatment for the afflicted.

The rest of the day was given over to a conference on health educational methods. Mr. Frank Kiernan was given credit for arranging the details of a very successful meeting.

SOCIETY MEETINGS

DISTRICT MEDICAL SOCIETIES

Essex South District Medical Society

Wednesday, March 3—Lynn Hospital. Clinic, 5 P. M. Dinner, 7 P. M. Dr. Charles E. Mongan, Somerville, "Some Problems of Present-Day Practice."

Thursday, May 6—Censors meet at Salem Hospital, 3:30 P. M.

Tuesday, May 11—The Tavern, Gloucester. Annual meeting. Speaker to be announced.

Essex North District Medical Society

May 5, 1926—The annual meeting at the Anna Jaques Hospital, Newburyport.

Middlesex East District Society

April 14—At the Harvard Club at 6:30 P. M. Address by Dr. William E. Ladd; subject, "Kidney Affections in Childhood."

May—Annual meeting, Colonial Inn, North Reading. Subject and speaker to be announced.

Suffolk District Medical Society

February 24—At 8:15 P. M. Surgical Section. "Post-operative Care of Surgical Cases," Dr. Dean Lewis, Chicago. "Surgical Convalescence," by Dr. John Bryant.

March 31—At 8:15 P. M. Medical Section. "Some Experiments in Group Physical Examination," Dr. Roger I. Lee.

April 28—At 8:15 P. M. Annual meeting. Election of officers. "Some Diagnostic, Prognostic and Therapeutic Aspects of Disorders of the Blood," Drs. George R. Minot, Cyrus C. Sturgis and Raphael Isaacs.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.